Article

Ocean Governance in the 21st Century: A "New Package-Deal"

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This Article demonstrates how technological innovation and climate change, specifically the introduction of unmanned vessels, artificial islands, and rising sea levels, undermine the balance between exclusive and inclusive rights under current ocean governance, thus triggering a process of regime evolution. Through the application of policy-oriented jurisprudence, this Article proposes to shift ocean governance from its outdated reliance upon the natural land as a source of rights and obligations to a more nuanced approach that facilitates a more optimal global order. First, having demonstrated that the natural land is no longer a stable and predictable source of title, this Article proposes that the "Land Dominates the Sea" principle should evolve to a model premised on an alternate conceptualization: "Population Dominates the Sea." This proposal challenges the foundation of the law of the sea and suggests that legal responses to artificial islands and submerging land should be treated together to facilitate a compromise solution detached from the outdated reliance on natural land. Second, this Article argues that the exclusive economic zone should evolve from a regime of enumerated rights *in* the spatial area to include rights *to* the spatial area in order to augment environmental protection and national security while promoting the benefits of unmanned vessels. While there are many possible arrangements that may be pursued by the participants involved, the changes to the law of the sea must balance their goals and interests in a "new package-deal."

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> [T]he principle of the freedom of the seas cannot be treated as a rigid dogma incapable of adaptation to situations which were outside the realm of practical possibilities in the period when that principle first became part of international law. — Hersch Lauterpacht[1]

INTRODUCTION

During the last several centuries, ocean governance developed in stages through a process of claims and counterclaims.[2] Since the Grotian concept of *mare liberum* (open sea) prevailed over claims for *mare clausum* (closed sea), coastal states claimed, and were recognized as possessing, ever increasing exclusive ocean jurisdictions.[3] This regime evolved in response to changing social, economic, and technological developments, all of which affected the claims made by various participants. As *mare liberum* retreated seaward, some of its elements remained within spatial areas subjected to exclusive state jurisdiction, including passage rights, certain high-seas freedoms, and flag-state jurisdiction.[4] A balance emerged between inclusive and exclusive uses, between *mare liberum* and *mare clausum*.

In 1982, the United Nations Convention on the Law of the Sea (UNCLOS) was adopted as a comprehensive "package-deal" to govern the interactions between participants over the oceans.[5] Produced by a parliamentary diplomatic arena, the Convention provided for the optimum global order at the time, optimizing the aggregate gain in international values for participants.[6] The law of the sea evolved in correlation with the interests and capabilities of participants to exercise jurisdiction over parts of the oceans.[7] Yet the regime governing ocean

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1. Hersch Lauterpacht, *Sovereignty over Submarine Areas*, 27 BRIT. Y.B. INT'L L. 376, 399 (1950).

2. *See* DONALD ROTHWELL & TIM STEPHENS, INTERNATIONAL LAW OF THE SEA 1-4 (2d ed. 2016); MYRES S. MCDOUGAL & WILLIAM T. BURKE, THE PUBLIC ORDER OF THE OCEANS ch. 1 (1962); Gershon Hasin, *Developing A Global Order for Space Resources: A Regime Evolution Approach*, 52 GEO. J. INT'L L. 77, 146-48 (2020) [hereinafter Hasin, *Resources*].

3. The *mare liberum* refers to a global order in which the oceans are open to all users (inclusive use) and *mare clausum* means that the body of water is closed by the state for others (exclusive use). *See* ROTHWELL & STEPHENS, *supra* note 2, at 1-4; Karin Burke & Deborah DeLeo, *Innocent Passage and Transit Passage in the United Nations Convention on the Law of the Sea*, 9 YALE J. WORLD PUB. ORDER 389, 389 (1983).

4. *See* Jonathan Charney, *Rocks That Cannot Sustain Human Habitation*, 93 AM. J. INT'L L. 863, 865-66 (1999); James Kraska, *Excessive Coastal State Jurisdiction: Shipboard Armed Security Personnel*, *in* JURISDICTION OVER SHIPS, POST-UNCLOS DEVELOPMENTS IN THE LAW OF THE SEA 167, 169-74 (Henrik Ringbom ed., 2015) [hereinafter Kraska, *Excessive*]; *see, e.g.*, United Nations Convention on the Law of the Sea, arts. 19, 27, 32, 38, 45, 52, 58, 69, 70, 94, 211, 220, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

5. On the "package-deal," see UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1982: A COMMENTARY, 29-85 (1985) [hereinafter VIRGINIA COMMENTARY]; *see also* Xuexia Liao, *The LOSC as a Package Deal and its Implications for Determination of Customary International Law*, 35 INT'L J. MARINE & COASTAL L. 1 (2020).

6. The international "values" are based on the New Haven School of International Law and adapted to modern interactions. The term refers to desired events. *See* Gershon Hasin, *Confronting Space Debris Through the Regime Evolution Approach*, 97 INT'L L. STUD. 1073, 1077 (2021) [hereinafter Hasin, *Space Debris*]; *see also* Michael Reisman, Siegfried Wiessner & Andrew Willard, *The New Haven School: A Brief Introduction*, 32 YALE J. INT'L L. 575, 576 (2007).

7. Eric Posner & Alan Sykes, *Economic Foundation of the Law of the Sea*, 104 AM. J. INT'L L. 569 (2010).

resources is dynamic and continues to evolve through claims and counterclaims by states and other participants.[8]

Since UNCLOS was negotiated, technological innovation and the effects of climate change have continuously altered the circumstances underlying the interactions among participants. Climate change leads to the acidification of the oceans and the destruction of marine biodiversity and sustainability, exacerbating the depletion of fisheries.[9] Higher global temperatures lead to the recession of ice, opening new Arctic transportation routes and creating access to new sources of fossil fuels,[10] but also increasing global sea levels, thereby altering geographical realities.[11] Technological innovations revolutionize shipping through the introduction of unmanned and autonomous vessels,[12] increasing risks for coastal states and affecting their ability to exert their jurisdictional powers. Finally, artificial islands are transformed from minor features to large-scale habitable landmasses.[13]

Scholars and policymakers have considered methods to alleviate the effects of rising sea levels on maritime jurisdictions,[14] ensure the consistency of unmanned vessels with the rules set forth under UNCLOS and the conventions of the International Maritime Organization (IMO),[15] and address the need to properly regulate the Arctic.[16] This Article offers a novel approach to these issues. Through policy-oriented jurisprudence, rather than considering the changing circumstances and their effects judgmentally, as problems requiring solutions, this Article tracks the evolution of the law of the sea based on these

8. *See id.* at 595.

9. *See* IPCC, THE OCEAN AND CRYOSPHERE IN A CHANGING CLIMATE ch. 5 (2019) [hereinafter IPCC, *Oceans Report*]; Andrew Tirrell, *Climate Change and Fisheries Politics*, *in* CLIMATE CHANGE AND OCEAN GOVERNANCE ch. 9 (Paul Harris ed., 2019); JAMES HARRISON, SAVING THE OCEANS THROUGH LAW 259 (2017).

10. *See* Lawson W. Brigham, *The Changing Maritime Arctic and New Marine Operations*, *in* GOVERNANCE OF ARCTIC SHIPPING 3, 12 (Robert Beckman et. al. eds., 2017); Aldo Chircop, *Testing International Legal Regimes: The Advent of Automated Commercial Vessels* (forthcoming 2018 GERMAN Y.B. INT'L L.) (manuscript at 3).

11. *See* IPCC, *Oceans Report*, *supra* note 9, at ch. 4; Int'l Law Comm'n, *Sea-level Rise in Relation to International Law Report*, U.N. Doc. A/CN.4/740 (Feb. 28, 2020) [hereinafter ILC, *Sea-level*].

12. *See* Joel Coito, *Maritime Autonomous Surface Ships*, 97 INT'L L. STUD. 259 (2021); Craig Allen, *Determining the Legal Status of Unmanned Maritime Vehicles: Formalism vs Functionalism* (2018), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3244172 (manuscript at 1).

13. *See* Imogen Saunders, *Artificial Islands and Territory in International Law*, 52 VAND. J. TRANS. L. 643, 645 (2019).

14. *See, e.g.*, David Caron, *When Law Makes Climate Change Worse*, 17 ECOLOGY L. Q. 621 (1990); A.H.A. Soons, *The Effects of Rising Sea Level on Maritime Limits and Boundaries*, 37 NETH. INT'L L. REV. 207 (1990); Julia Lisztwan, *Stability of Maritime Boundary Agreements*, 37 YALE J. INT'L L. 154 (2012); JENNY STOUTENBURG, DISAPPEARING ISLAND STATES IN INTERNATIONAL LAW (2015); KATE PURCELL, GEOGRAPHICAL CHANGE AND THE LAW OF THE SEA (2019).

15. *See, e.g.*, Robert Veal, Michael Tsimplis & Andrew Serdy, *The Legal Status and Operation of Unmanned Maritime Vehicles*, 50 OCEAN DEV. & INT'L L. 23 (2019); Coito, *supra* note 12; P.W. Pritchett, *Ghost Ships: Why the Law Should Embrace Unmanned Vessel Technology*, 40 TUL. MAR. L. J. 197 (2015); Henrik Ringbom, *Regulating Autonomous Ships—Concepts, Challenges and Precedents*, 50 OCEAN DEV. & INT'L L. 141 (2019).

16. *See, e.g.*, Brigham, *supra* note 10; SUSTAINABLE SHIPPING IN A CHANGING ARCTIC (Lawrence Hildebrand, Lawson Bringham & Tafsir Johansoon eds., 2018); GOVERNANCE OF ARCTIC SHIPPING (Robert Beckman et. al. eds., 2017).

changes.[17] A policy-oriented jurisprudence does not merely "map the complex and changing international decision process," but is shaped to enable the scholar and policymaker to "project the range of probable outcomes and to enhance the skills necessary for influencing them so that preferred outcomes ensue."[18] Through the application of policy-oriented jurisprudence, one can not only identify the probable outcomes that the changing circumstances will produce, but also identify the preferred outcome that will optimize gains in values for participants and the paths through which such outcome may be promoted.

As elaborated below, the changing geographical and technological circumstances will destabilize the prescribed balance between inclusive and exclusive access to ocean resources and undermine the aggregated gain in values for all participants, triggering a process of regime evolution. This process will affect entitlements and powers relating to maritime resources through claims and counterclaims; indeed, this can already be observed in the context of the South China Sea and small island states. Under existing international norms, developing states and primarily small island states will be on the losing side, and if the development of the law is left to state practice, the outcome of the international legal process will necessarily favor the major naval powers even further. Unfortunately, proposing amendments that only benefit adversely affected participants may prove to be of limited usefulness. For amendments to be universally acceptable, they must inherently generate broad consensus. This Article therefore lays out a "new package-deal," which will help generate consensus in much the same way as UNCLOS.

There is no doubt that the facts of climate change and the development of artificial islands and unmanned vessels will trigger the evolution of the law of the sea. While it is unclear whether convening a fourth United Nations Conference on the Law of the Sea is feasible, this Article argues that such a path is preferable to allowing state practice to reshape the current regime. In a parliamentary-like diplomatic arena, relatively weak participants—such as small island and other developing states—have at least a chance of affecting the outcome of negotiations in their favor, as occurred during the third United Nations Conference on the Law of the Sea and in the climate change context.[19] While their gains in these negotiations may be limited, the ability of such actors to secure their interests through state practice is even lower. As this Article elaborates, the distributional and equitable benefits of the proposed "new package-deal" justify the potential challenges and risks. The major task is generating a broad consensus for amendments by creating a regime that will

17. To appreciate this Article's goal, consider an example of modern developments and their potential effects on ocean interactions. Imagine a nuclear-powered, remotely-controlled cargo vessel, a development of the one recently introduced in Norway, traversing a maritime zone emanating from a now submerged island of a small island state, en route to unload its cargo on an artificial island belonging to a major naval power, to then be hijacked by cyber-terrorists within the maritime zone of a fourth state. The law of the sea was not formulated while accounting for the situations faced by modern actors.

18. MICHAEL REISMAN, THE QUEST FOR WORLD ORDER AND HUMAN DIGNITY IN THE TWENTY-FIRST CENTURY: CONSTITUTIVE PROCESS AND INDIVIDUAL COMMITMENT 30-31 (2d ed. 2022) [hereinafter REISMAN, WORLD ORDER].

19. *See infra* note 258; VIRGINIA COMMENTARY, *supra* note 5, at 29-113.

optimize gains for as many stakeholders as possible while ensuring the efficient and sustainable use of the oceans. By reshaping the foundation of the law of the sea and shifting it away from its outdated reliance upon the natural land for ocean rights and obligations, a new compromise solution can be struck: one benefitting the disadvantaged members of the international community while securing the support of the major powers.

This Article thus tracks the participants involved—their goals, interests, and points of leverage—and outlines their interactions in the changing circumstances identified above. This analysis facilitates the identification of not only the anticipated outcomes but the proposal of a new compromise between inclusive and exclusive rights over the oceans that will promote the preferred outcomes. Appreciating the rationales of maritime jurisdiction and the interactions between the participants, as opposed to the existing rules, enables the proposal of amendments in a similar, balanced "package deal" approach to optimize the gains in values for participants, forming a "new package-deal."

This Article proposes that, in light of changing circumstances, ocean governance in the twenty-first century must include two main shifts. First, to respond to changes to the land, the principle that the "Land Dominates the Sea" must evolve to incorporate elements stemming instead from the principle that the "Population Dominates the Sea" to amend the outdated reliance upon naturally formed land as a source of rights and obligations. Second, to accommodate the benefits of unmanned vessels while responding to the risks posed to the security, economy, and environment of coastal states, jurisdiction in the exclusive economic zone (EEZ) will and must evolve from enumerated rights *in* the waters to jurisdiction *over* the waters. Although some fine-tuning of these shifts will be required through the international lawmaking process, this Article will sketch the overall direction in which the balance between *mare liberum* and *mare clausum* must evolve to optimize ocean governance. Considering the changing circumstances, protecting and preserving the common interest promoted by the *mare liberum* requires the international community to recognize additional elements of the *mare clausum*.

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International regimes evolve to ameliorate the effects of international externalities,[20] yet the outcomes are determined based on interactions among participants, and they ideally optimize gains in values rather than simply remedy wrongs or adverse effects for some. The regime evolution approach applied in this Article is not intended to describe the development process of global regimes ex post, but rather to provide a framework through which the process of regime evolution can be anticipated ex ante. The latter is both descriptive and prescriptive. As a policy-oriented approach, it observes international law from a "vantage point outside of it,"[21] enabling the descriptive identification of the

20. Posner & Sykes, *supra* note 7, at 569-70.

21. REISMAN, WORLD ORDER, *supra* note 18, at 30; Myres S. McDougal, Harold D. Lasswell

probable outcomes of interactions in light of changing circumstances. Simultaneously, it facilitates the prescriptive formulation and proposal of arrangements that will promote the common interest. This approach evaluates process, substance, and metric of success.

> For an international regime to constitute a probable evolution of international law, it must be feasible, meaning that participants are likely to adopt such governance through their interactions based on accommodating their conflicting goals, interests, and leverages. Effectiveness considers the optimization of international values for all participants, which may prescribe a less than perfect solution for any putative "problem." Manageability is the final yet critical element. It considers a regime's opposability by outliers, in other words, the ability to sway the policy choices of reluctant participants to conform with effectiveness.[22]

A regime's feasibility, effectiveness, and manageability should be measured relative to the interactions among the participants in the specific circumstances.

> A regime's feasibility can be measured by reference to the participants involved, their bases of power, objectives, and the outcomes of their anticipated interactions in the specific circumstances. Effectiveness depends on a given regime's ability to optimize the gain in values for all participants; manageability turns upon the situations in which the interactions transpire and the strategies the participants choose.[23]

Based on policy-oriented jurisprudence, the approach taken in this Article focuses on the process through which norms develop via domestic and international interactions between various participants.[24] The law of the sea, similar to any international regime of governance, is viewed as an instrument to shape the policy choices of participants towards the common interest: a balance produced among the participants involved based on their correlating and conflicting goals, interests, and points of leverage. The common interest includes preserving the minimum order, which refers to the prevention of conflict, and promoting the optimum order, which is defined as the aggregated gain in international values for as many participants as possible.[25] Although the law of the sea is a legal enclave,[26] where the textual, rules-based approach may be reasonably applied to evaluate the legality of certain decisions,[27] a contextual-policy-based approach is more appropriate when it comes to a descriptive and

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& Michael Reisman, *Theories about International Law: Prologue to a Configurative Jurisprudence*, 8 VA. J. INT'L L. 188 (1968).

22. Hasin, *Space Debris*, *supra* note 6, at 1077.

23. *Id.* at 1098.

24. *See also* Harold Hongju Koh, *Transnational Legal Process*, 75 NEB. L. REV. 181 (1996); Harold Hongju Koh, *Is There A "New" New Haven School of International Law?*, 32 YALE J. INT'L L. 559 (2007). On the evolution of social norms, see Robert C. Ellickson, *The Evolution of Social Norms: A Perspective From the Legal Academy*, *in* SOCIAL NORMS 35 (Karl-Dieter Opp & Michael Hechter eds., 2001).

25. On the optimum order and minimum orders, see MYRES MCDOUGAL, HAROLD LASSWELL & IVAN VLASIC, LAW AND PUBLIC ORDER IN SPACE 157, 160 (1963); REISMAN, WORLD ORDER, *supra* note 18, at 317-25.

26. The term refers to a developed field of international law where there is a high probability that the legality of a decision is subject to legal analysis by a third-party decisionmaker such as a court or tribunal. *See also* REISMAN, WORLD ORDER, *supra* note 18, at 31-35.

27. *Id.*

prescriptive analysis of the international legal process.

> Rather than the question as to which rules apply, the questions underlying the contextual-policy-based decision-making are[:] (1) what ought to be the goal values of the community with respect to the values concerned; (2) which practicable arrangements will most efficiently optimize the production and distribution of those goal values in short-term and longer-term projected contexts; and (3) how can those arrangements be installed.[28]

To be sure, the authoritative rules of the law of the sea, such as those under UNCLOS, must be examined and accounted for when considering the evolution process. Yet these rules should be considered "in terms of the extent to which the social and economic consequences of their application will approximate the value goals of the relevant community," rather than through mere textual analysis.[29] For comprehensive regimes, such as the law of the sea, there can be critical points in time when changes in the circumstances in which interactions occur, either through natural or man-made fluctuations, trigger a process of regime evolution. When the current international rules no longer provide for the optimal distribution of values or threaten to undermine peace, global governance evolves to provide a new balance to sway the policy choices of participants towards the common interest.[30]

As this Article will show, from a descriptive perspective, the changing circumstances with respect to the oceans alter the situations in which interactions occur, increasing claims for exclusive jurisdiction and thus triggering a process of regime evolution that will further shift the global order from one based on *mare liberum* to one of *mare clausum*. As will become evident, these developments undermine the effectiveness of certain UNCLOS rules as the optimum order, but an uncontrolled process of claims and counterclaims may lead to conflicts threatening to undermine the minimum order.[31] Thus, from a prescriptive perspective, this Article will propose that the international community should react by prescribing a more explicit international public order to balance claims through feasible, effective, and manageable rules.

This Article will be divided into four parts. Part I will briefly survey the balance between inclusive and exclusive rights under the current law of the sea. Part II will demonstrate how the changing circumstances undermine the effectiveness and manageability of this balance, which will ultimately trigger a process of regime evolution. To evaluate the anticipated interactions and how the process of regime evolution will unfold, Part III will consider the international values and interactions among the participants involved. Part IV will propose a "new package-deal" for ocean governance. Part V will briefly conclude.

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28. *See also id.* at 127-28.

29. *Id.*

30. *See, e.g.*, Hasin, *Resources*, *supra* note 2, at 159-60.

31. *See, e.g.*, Caron, *supra* note 14, at 641; Lisztwan, *supra* note 14, at 156; Saunders, *supra* note 13, at 674-75; Veal, *supra* note 15, at 24; Asaf Lubin, *The Dragon-Kings Restraint: Proposing a Compromise for the EEZ Surveillance Conundrum*, 57 WASHBURN L. J. 17, 29-51 (2018).

I. THE BALANCE BETWEEN *MARE LIBERUM* AND *MARE CLAUSUM*

During the Middle Ages, despite claims by some states to exclusively appropriate parts of the oceans, the Grotian doctrine of *mare liberum* triumphed over these claims of *mare clausum*, constituting the foundation of the law of the sea up to the nineteenth century.[32] Responding to increasing naval capabilities and security concerns, coastal states subsequently claimed to confine *mare liberum* in favor of exclusive rights. States claimed exclusive jurisdiction over a narrow band of water off their coasts, culminating in the recognition of a three-nautical-mile territorial sea.[33] After that, the concept of *mare liberum* was further restricted through a myriad of claims.

To secure vital interests in their territorial sea and terrestrial domain, coastal states were recognized with certain protective powers in "contiguous zones" attached to their territorial sea.[34] With the development of technological capabilities enabling the exploitation of the seabed and subsoil, the United States claimed exclusive jurisdiction over the natural prolongation of its land into and under the sea.[35] Other states followed suit, eventually culminating in the 1958 Conventions on the Law of the Sea, which recognized certain exclusive rights of coastal states.[36] The evolution of the law of the sea continued with claims made for exclusive fishing zones and extended territorial seas.[37] These claims triggered another formal process of codification through the United Nations. The third United Nations Conference on the Law of the Sea in the 1970s was convened, and after a decade-long process, it produced a global order that balanced the aspirations of coastal states to extend their exclusive jurisdiction seaward in pursuit of their economic and security interests and the interest of other participants to inclusively use the oceans and their resources.

UNCLOS confined *mare liberum* through various exclusive jurisdictions, and as a result, the concept of *mare liberum* lost its primacy to exclusive sovereign rights, enumerated jurisdictions, and even sovereignty over vast areas of the oceans and most of their natural resources.[38] Crucially, these exclusive jurisdictions were balanced with, and accompanied by, rights and jurisdictions reserved for other members of the international community.[39] In addition to

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32. *See* ROTHWELL & STEPHENS, *supra* note 2, at 2-4.

33. *See id.* at 1-4, 60-66.

34. *See, e.g.*, Hugo Caminos, *Contiguous Zone*, MAX PLANCK ENCYCLOPEDIA OF PUB. INT'L L. (last visited July 10, 2023).

35. Proclamation No. 2667, 10 Fed. Reg. 12,305 (Sept. 28, 1945); ROTHWELL & STEPHENS, *supra* note 2, at 104-11.

36. Convention on the Continental Shelf, Apr. 29, 1958, 499 U.N.T.S. 311; Convention on the High Seas, Apr. 29, 1958, 450 U.N.T.S. 11; Convention on the Territorial Sea and the Contiguous Zone, Apr. 29, 1958, 516 U.N.T.S. 205.

37. *See* VIRGINIA COMMENTARY, *supra* note 5, at 491-510; ROTHWELL & STEPHENS, *supra* note 2, at 85-88; *see, e.g.*, Santiago Declaration on the Maritime Zones, Aug. 18, 1952, 1006 U.N.T.S. 323; Montevideo Declaration on the Law of the Sea, May 8,1970, 9 I.L.M. 1081.

38. *See* ROTHWELL & STEPHENS, *supra* note 2, at 87; Posner & Sykes, *supra* note 7, at 595.

39. *See, e.g.*, UNCLOS, *supra* note 4, arts. 19, 38, 27, 28, 58, 87, 94, 110, pts. XI, XII; *see also* Kraska, *Excessive*, *supra* note 4, at 168-75; VIRGINIA COMMENTARY, *supra* note 5, at 563-65; ALEXANDER PROELSS, UNITED NATIONS CONVENTION ON THE LAW OF THE SEA: A COMMENTARY 445-46 (2017).

inclusive rights, exclusive jurisdictions were also accompanied by certain obligations, primarily directed at ensuring the protection of the marine environment for the benefit of all affected stakeholders.[40]

To properly appreciate the effects of the changing circumstances on the balance between *mare liberum* and *mare clausum* under UNCLOS, this Part will elaborate three specific equilibriums: (A) territorial sea and passage rights; (B) sovereign rights and rights of all states; and (C) the principle of "Land Dominates the Sea" and the rights of the international community.

A. Territorial Sea Versus Passage Rights

Under the law of the sea, all other states have passage rights in the territorial sea otherwise under the sovereignty of the state. Coastal states leveraged their ability and interest to exercise power within the proximity of their coasts against the naval powers that depended upon such transportation routes, and predominantly straits, for their security and commercial objectives.[41] Thus, the territorial sea regime balances the security and economic interests of all coastal states with the security and economic interests of other users—primarily the naval powers.[42]

The rights of innocent passage and transit passage (through straits) preserve elements from the freedom of navigation within the now otherwise exclusive waters.[43] Though the coastal state may regulate navigation through its territorial sea,[44] it cannot prevent passage that is deemed "innocent"; however, it may temporarily suspend innocent passage under specific conditions.[45] In respect of transit passage, however, while the coastal state may regulate navigation, it may not impede or suspend the passage,[46] and vessels may travel in their "normal modes."[47] This distinction makes sense given the importance of straits for commercial and military activities.

The process of claims and counterclaims thus culminated in a balance formulated to allow coastal states to exert powers within a narrow band of waters off their coasts to safeguard national security, while retaining the ability of other states to engage in maritime commerce and naval transportation when not threatening the coastal state. The rationale of the balance is to provide the coastal state with a security "buffer" while protecting the interests of other states to use the oceans for transportation.

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40. UNCLOS, *supra* note 4, pt. XII.

41. *See* Burke & DeLeo, *supra* note 3; Lea Brilmayer & Natalie Klein, *Land and Sea*, 33 N.Y.U. J. INT'L L. & POL. 703, 717-19 (2001).

42. Hitoshi Nasu, *The Regime of Innocent Passage in Disputed Waters*, 94 INT'L L. STUD. 241, 242 (2018).

43. *See* VIRGINIA COMMENTARY, *supra* note 5, at 151-79, 279-94, 321-31; *see* Nasu, *supra* note 43, at 242-43.

44. UNCLOS, *supra* note 4, arts. 21-22.

45. *Id.*, art. 25.

46. *Id.*, arts. 44-45.

47. *Id.*, art. 39(1)(c); Burke & DeLeo, *supra* note 3, at 403-04.

B. Sovereign Rights Versus Rights of All States

UNCLOS balances coastal states' exclusive sovereign rights and jurisdictions beyond the territorial sea, primarily relating to natural resources, with the rights of other states, which retained elements of *mare liberum* within these spatial areas. The balance is composed of two separate equitable distributions between exclusive and inclusive rights: (1) coastal states' rights in the EEZ were recognized along with the rights of all other states in the same spatial area; and (2) sovereign rights of broad-margin coastal states over the natural prolongation of their land beyond the EEZ were balanced with the interests of the international community as part of the common heritage of humankind.

1. The EEZ State and Other States

Before and during the third United Nations Conference on the Law of the Sea, coastal states, predominantly in South America, laid claims for 200-nautical-mile territorial seas.[48] Such claims contradicted the interests of other participants to preserve the freedom of navigation and inclusive use beyond the otherwise narrow territorial sea. During the Conference, a compromise was reached: instead of a 200-nautical-mile territorial sea, the EEZ emerged as a set of enumerated sovereign rights and accompanying jurisdictions, primarily concerning natural resources, to be exercised by coastal states within that spatial area. While the territorial sea is a set of rights *to* a spatial area, the EEZ regime is a set of rights *in* a spatial area, in which "the rights and jurisdictions of the coastal state and the rights and freedoms of other states are governed by the relevant provisions of this Convention."[49] This *sui generis* regime is the product of the fiat of the international community, a compromise between claims to *mare liberum* and *mare clausum*.

In this spatial area, exclusive sovereign rights over living and non-living resources are accompanied by jurisdiction over artificial installations, marine scientific research, and the protection and preservation of the marine environment.[50] While the jurisdictions over artificial installations and marine scientific research are exclusive,[51] the jurisdiction over environmental protection is shared with flag-states and other affected states.[52] The EEZ regime assigns certain high-seas freedoms to the coastal state while retaining other rights, duties, and jurisdictions for other states, providing for an equitable balancing of assigned and unassigned rights.[53] Article 58(1) of UNCLOS reserves high-seas freedoms within the EEZ for other states, except those specifically assigned to coastal states, through the broad reference to "other internationally lawful uses

48. *See* VIRGINIA COMMENTARY, *supra* note 5, at 491-510.
49. UNCLOS, *supra* note 4, art. 55.
50. *Id.*, art. 56(1)(b).
51. *Id.*, arts. 60, 246.
52. *Id.*, pt. XII.
53. *See* UNCLOS, *supra* note 4, art. 58; Charney, *supra* note 4, at 865-66; PROELSS, *supra* note 39, at 430-34.

of the sea related to these freedoms, such as those associated with the operation of ships [and] aircraft . . . ." In respect of any rights or jurisdictions not specifically attributed by the Convention, Article 59 of UNCLOS provides that the interests of the coastal state are not superior.[54] Because the EEZ was intended to secure the economic interests of the coastal state, the balance in UNCLOS should favor the coastal state should unforeseen risks to such interests materialize.[55] But as long as the interest is unrelated to such economic rights, *mare liberum* was intended to triumph.[56] Of course, these are rebuttable assumptions, as any conflict of interests should still be resolved on the basis of equity and in reference to the interests of the international community.[57]

It is thus reasonable to conclude that UNCLOS intended to preserve *mare liberum* within 200 nautical miles off the coasts, so long as it is not incompatible with the explicit sovereign rights and jurisdictions of the EEZ state.

2. Outer Continental Shelf and the Area

The third United Nations Conference on the Law of the Sea distributed rights over the natural resources (primarily petroleum and natural gas) of the seabed and the subsoil (known as the juridical continental shelf) between the coastal states and the other members of the international community. Coastal states were recognized with exclusive sovereign rights over certain parts of the continental shelf, while all the resources of the seabed and subsoil beyond such areas were to be inclusively exploited as part of the defined international Area.[58]

Under UNCLOS, all states have sovereign rights over the shelf within 200 nautical miles off their coasts as part of the EEZ regime. During the Conference, broad-margin states aspired to retain sovereign rights over the entire natural prolongation of their land territory into and under the sea, extending in many places far beyond 200 nautical miles. This claim was countered by narrow-margin states aspiring to dispense with the criterion of the continental shelf and limit exclusive state jurisdiction to 200 nautical miles.[59] The compromise solution was enshrined in the long and complex UNCLOS Article 76. Accordingly, broad-margin states may lay claim to exclusively use parts of the international Area beyond 200 nautical miles of their coasts up to the edge of the continental margin (this part of the continental shelf is commonly referred to as

54. YOSHIFUMI TANAKA, THE INTERNATIONAL LAW OF THE SEA 159 (3d ed. 2019).

55. VIRGINIA COMMENTARY, *supra* note 5, at 569. *But see* PROELSS, *supra* note 39, at 463 (proposing a rebuttable assumption in favor of other states).

56. VIRGINIA COMMENTARY, *supra* note 5, at 569.

57. UNCLOS, *supra* note 4, art. 59.

58. UNCLOS, *supra* note 4, art. 1(1) ("'Area' means the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction.").

59. *See, e.g.*, UNCLOS III, Official Documents, Second Committee Meetings, 20th Meeting, U.N. Doc. A/CONF.62/C.2/SR.20, ¶ 10; UNCLOS III, Official Documents, Second Committee Meetings, 19th Meeting, U.N. Doc. A/CONF.62/C.2/SR.19, ¶ 29; UNCLOS III, Official Documents, Second Committee Meetings, 33rd Meeting, U.N. Doc. A/CONF.62/C.2/SR.32, ¶ 24. Broad-margin states are those whose natural prolongation extends uninterrupted beyond 200 nautical miles off their coasts, while narrow-margin states are those whose margin ends before such distance is reached.

the Outer Continental Shelf or OCS),[60] but they are subject to three types of conditions intended to preserve *mare liberum*: technical, procedural, and financial.

The *technical element* requires the fulfillment of two interrelated analyses. The first, in paragraph 4 of Article 76, stipulates the scientific criterion for determining the edge of the margin via one of two formulas. The second, in paragraphs 5, 6, and 7, imposes limits on such claims irrespective of geology and geomorphology. The *procedural element* in paragraph 8 of Article 76 requires that the coastal state submit its claim to an independent scientific commission, the Commission on the Limits of the Continental Shelf (CLCS), that verifies the claims; only limits established based on the CLCS's recommendation will be "final and binding."[61] The final *financial element*, located in Article 82, is a compromise, imposing a revenue-sharing obligation on OCS exploitation.[62] These three conditions serve to confine exclusive claims over otherwise inclusive resources.

At the final session of the Conference, its President, Ambassador Tommy Koh, explained the "package-deal" nature of this concession to broad-margin states—it included revenue-sharing—as well as its intended conventional status.[63] Some scholars, however, have claimed that the OCS constitutes customary international law,[64] and the International Court of Justice (ICJ) has recognized paragraph 1 of Article 76 as reflecting customary international law.[65] Others, however, have questioned the validity of such a proposition.[66] As William Burke explained, it is quite unconvincing to argue that the procedural and financial treaty conditions may become customary and apply to non-parties,[67] but that without these conditions, it is doubtful that the balance between these exclusive claims and the principle of *mare liberum* may be preserved.

The regime of the common heritage of mankind in UNCLOS and in the 1994 Implementation Agreement subjects the exploitation of the seabed and subsoil of the international Area to regulation by the International Seabed

60. The Outer Continental Shelf (OCS) refers to an area of sovereign rights to the continental shelf that lies beyond 200 nautical miles from a state's baselines. On whether an OCS claim may overlap another state's EEZ, see Bjorn Kunoy, *How Deep is Your Love: Intercrossing of Inner and Outer Continental Shelf Entitlements*, 62 JAPANESE Y.B. INT'L L. 335 (2019).

61. UNCLOS, *supra* note 4, art. 76(8)-(9); Tanaka, *supra* note 54, at 167-71.

62. Tanaka, *supra* note 54, at 171.

63. UNCLOS III, 193rd Plenary Meeting, ¶ 48, U.N. Doc. A/CONF.62/SR.193; *see* BJORNI MAGNÚSSON, THE CONTINENTAL SHELF BEYOND 200 NAUTICAL MILES 85-86 (2015).

64. *See* Kevin A. Baumert, *The Outer Limits of the Continental Shelf under Customary International Law*, 111 AM. J. INT'L L. 827, 836-45 (2017).

65. Territorial and Maritime Dispute (Nicar. v. Colom.), Judgment, 2012 I.C.J. Rep. 624, ¶ 118 (Nov. 19).

66. *See, e.g.*, Liao, *supra* note 5, at 32-33; Vladimir Golitsyn, *Continental Shelf Claims in the Arctic Ocean: A Commentary*, 24 INT'L J. MARINE & COASTAL L. 401, 405 (2009); MALCOLM EVANS, THE LAW OF THE SEA 656 (5th ed. 2018); Tanaka, *supra* note 54, at 170.

67. William Burke, *Customary Law as Reflected in the LOS Convention: A Slippery Formula, in* THE INTERNATIONAL IMPLICATIONS OF EXTENDED MARITIME JURISDICTION IN THE PACIFIC 402, 405 (Craven et al. eds., 1989).

Authority (ISA) and revenue-sharing.[68] While this form of governance promotes inclusive rather than exclusive use, with any exclusivity subject to authorization by an international organization, it does confine what would otherwise be the freedom of the high seas. In other words, though it is a far cry from *mare clausum*, it does reduce the applicability of *mare liberum* to the Area.

C. The Land Dominates the Sea Versus the International Community

The foundational principle of the law of the sea is that all maritime jurisdiction originates in sovereignty over land—a principle known as "Land Dominates the Sea."[69] The land as distinguished from the sea, or the *terra firma*, thus delineates exclusive and inclusive ocean jurisdictions: sovereignty over naturally formed and eligible land is a precondition of maritime entitlement, and, because territory is a precondition to "statehood," flag-state rights are tied to sovereignty over land.

Though it is undisputed that continental land generates maritime entitlements, the ability of insular features to generate entitlements is debated. It is important to delineate which features are entitled to generate maritime jurisdiction, and to what extent, because stricter criteria for eligibility reserve more ocean space for inclusive use and vice-versa. The spatial extent of maritime jurisdiction is balanced by two principles. First, the baselines from which most maritime jurisdiction is measured must be based on natural features, with the exception of harbor infrastructure.[70] Second, maritime entitlement is linked to a feature's ability to support human habitation or economic life.

In relation to landmass, islands have the potential of generating significantly larger exclusive rights than mainland.[71] The balance in Article 121(1), in conjunction with Article 60, is intended to curtail the ability of states to artificially extend their exclusive use seaward: "An island is a *naturally* formed area of land, surrounded by water, which is above water at high tide."[72] Low-tide elevations within twelve nautical miles off coasts and artificial harbors may, however, be used to extend maritime jurisdiction.[73] Artificial land reclamations have been used for basepoints, yet it is unclear whether this practice will gain broad support.[74] There is some dispute over whether islands fortified against erosion continue to sustain the naturally formed requirement, although there is agreement that they should.[75] There seems, however, to be a consensus

68. Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, July 28, 1994, 1836 U.N.T.S. 3; UNCLOS, *supra* note 4, pt. XI.

69. Maritime Delimitation in the Black Sea (Rom. v. Ukr.), Judgment, 2009 I.C.J. Rep. 61, ¶ 77 (Feb. 3).

70. UNCLOS, *supra* note 4, arts. 5, 11; *see also* PURCELL, *supra* note 14, at 264.

71. Soons, *supra* note 14, at 217-18; UNCLOS, *supra* note 4, art. 121(2).

72. UNCLOS, *supra* note 4, art. 121(1); Tanaka, *supra* note 54, at 75-79; Michael Gagain, *Climate Change, Sea Level Rise and Artificial Islands*, 23 COLO. J. INT'L ENV'T L. & POL'Y 77, 105 (2012).

73. UNCLOS, *supra* note 4, arts. 11, 13.

74. *See* PURCELL, *supra* note 14, at 264.

75. *See, e.g.*, *id.* at 246; ILC, *Sea-level*, *supra* note 11, ¶ 215.

that artificially formed islands should not be recognized with maritime jurisdiction beyond the 500-meter safety zone.[76] It has been suggested that an exception be made for artificial islands intended to preserve the territory of submerging small island states.[77]

The more contested balance is found in the ambiguous Article 121(3). This provision is intended to preclude states from claiming sovereign rights from "[r]ocks which cannot sustain human habitation or economic life of their own." The *South China Sea* tribunal suggested that jurisdiction turns on a feature's natural ability to sustain human habitation or economic life, irrespective of any meaning ascribed to the term "rock" or technological developments.[78] This proposition has been disputed by scholars,[79] who rightfully point out that it is more reasonable to conclude that the drafters intended that all islands be entitled to sovereign rights, including "rocks" that are able to sustain human habitation or economic life.[80]

Whichever interpretation is preferred, Article 121(3) emphasizes the ability to sustain human habitation or economic life. This makes sense, as these sovereign rights are intended, *inter alia*, to secure the population's access to vital natural resources such as fish or fossil fuels.[81] While security concerns may justify extending a territorial sea from a feature that cannot sustain human habitation or economic life but perhaps allows for a military installation, economic rights should follow the population or its ability to generate wealth. It has been suggested that with the development of technology, features may artificially develop the capability to sustain human habitation or economic life, yet whether such features will fulfill the criterion of Article 121 is disputed.[82]

In addition to sovereign rights, the EEZ regime prescribes exclusive jurisdictions to protect and preserve the marine environment. Because flag-state jurisdiction is retained regardless of the spatial jurisdiction of another state, the ability of interested states to enforce environmental and other interests not only on the high seas but also within their EEZs is already limited.[83] Thus, recognizing EEZ rights absent the interest or capability to enforce such jurisdiction would

76. UNCLOS, *supra* note 4, art. 60; *see, e.g.*, Soons, *supra* note 14, at 222; Saunders, *supra* note 13, at 663.

77. Gagain, *supra* note 72; STOUTENBURG, *supra* note 14, at 175.

78. *South China Sea* (Phil. v. China), PCA Case Repository 2013-19, Award, ¶¶ 489-506 (2013); Myron Nordquist et al., *UNCLOS Article 121 and Itu Aba in the South China Sea Final Award: A Correct Interpretation?*, *in* THE SOUTH CHINA SEA ARBITRATION 176 (S. Jayakumar et al. eds., 2018).

79. Scholars accurately point out that the *South China Sea* decision equates the term "rock" with "island," disregarding a term intentionally used by the drafters. *See, e.g.*, Nordquist et al., *supra* note 79; Tanaka, *supra* note 54, at 79-84; Gilbert Guillaume, *Rocks in the Law of the Sea: Some Comments on the South China Sea Arbitration Award*, EJIL:TALK! (Feb. 25, 2021), https://www.ejiltalk.org/ricks-in-the-law-of-the-sea-some-comments-on-the-south-china-sea-arbitration-award/.

80. Guillaume, *supra* note 79; PROELSS, *supra* note 39, at 871. This interpretation is further supported by state practice and legislative history, Liao, *supra* note 5, at 16-20; Guillaume, *supra* note 79, and it is consistent with the realization that the law of the sea developed in a manner which prefers exclusive state jurisdiction over resources.

81. ROTHWELL & STEPHENS, *supra* note 2, at 85; PROELSS, *supra* note 39, at 420; *South China Sea*, PCA Case Repository 2013-19, ¶¶ 512-20.

82. *See supra* note 77.

83. *See, e.g.*, UNCLOS, *supra* note 4, art. 220; *see also* Anne Bardin, *Coastal State's Jurisdiction over Foreign Vessels*, 14 PACE INT'L L. REV. 27 (2002).

undermine the interests of the international community and disrupt the foundations of the equilibrium.

II. CHANGING CIRCUMSTANCES

As the previous part explained, the law of the sea was structured to provide for a balance between inclusive and exclusive uses as the foundation of the regime governing access to ocean resources. It is founded, primarily, on the land as a source of rights and jurisdictions to be balanced with rights of other states. This balance is an essential element of the "package-deal," founded on the interactions that predicated its negotiation and development under the circumstances existing at that time. The regime responded to claims by states relating to economic, security, and environmental aspects, to balance inclusive and exclusive use. As this Part will show, climate change and technological innovation are producing dramatically different interactions than those of the 1970s. These changes will instigate a process of regime evolution, in which rules should be shaped in response to these changes to optimize the participants' gain in values.

A. Unmanned Vessels

In recent years, technological innovation has introduced the prospect of unmanned and autonomous maritime vessels.[84] Although remotely controlled maritime drones have already been employed by navies and coast guards,[85] the introduction of unmanned and autonomous transportation vessels grows increasingly near.[86] In anticipation, the International Maritime Organization (IMO), national authorities, and scholars have been working towards adapting international rules and standards to accommodate these vessels and mitigate the associated risks.[87] To distinguish between various types of unmanned and autonomous vessels, the IMO proposes four broad categories differentiated by degrees of autonomy: (i) "[s]hip[s] with automated processes and decision support"; (ii) "[r]emotely controlled ship[s] with seafarers on board"; (iii) "[r]emotely controlled ship[s] without seafarers on board"; and (iv) "[f]ully autonomous ship[s]."[88]

Although the IMO Conventions and standards will need to be fine-tuned for all four categories,[89] only two elements are important with respect to claims by states to exclusive or inclusive jurisdiction: presence of a crew and automation. Under the first two categories, the presence of a crew on board alleviates many of the risks posed to states by increased automation. As

84. Int'l Maritime Org., *Autonomous Shipping*, https://www.imo.org/en/MediaCentre/HotTopics/Pages/Autonomous-shipping.aspx.

85. Coito, *supra* note 12, at 272; Ringbom, *supra* note 15, at 156.

86. Ringbom, *supra* note 15, at 156; Pritchett, *supra* note 15, at 197-98.

87. Int'l Maritime Org., *supra* note 84; DANISH MARITIME AUTHORITY, ANALYSIS OF REGULATORY BARRIERS TO THE USE OF AUTONOMOUS SHIPS, FINAL REPORT (Dec. 2017) [hereinafter DMA REPORT]. For scholarship, see *supra* notes 12 and 15.

88. Int'l Maritime Org., *supra* note 84.

89. *See, e.g.*, Ringbom, *supra* note 15, at 156-60; Coito, *supra* note 12, at 298-306.

explained below, the benefits and risks stemming from the absence of a crew and full automation will generate claims by states to alter the balance between *mare liberum* and *mare clausum* within their maritime zones and perhaps over the high seas.

Scholars have been debating whether unmanned maritime vessels (UMVs)[90] constitute "ships" under specific IMO Conventions and UNCLOS.[91] As Craig Allen explained, with respect to each of the IMO Conventions, the term "ship" was defined to suit the specific instrument's objectives.[92] Although the terms "ship" and "vessel" are not defined under UNCLOS, scholars are generally in agreement that most, if not all UMVs, whether fully autonomous or remotely controlled, would constitute ships under the Convention.[93] Many authors, however, as Allen accurately points out, employed innovative interpretations to either fit or exclude certain UMVs from the scope of these terms, potentially exposing a "confirmation bias."[94] In any event, it is clear that at least with respect to UNCLOS, such vessels were not in existence or contemplated when the treaty was negotiated.[95] Although some evolutionary interpretation of UNCLOS is appropriate,[96] a significant disruption to its equilibrium will generate claims.

UMVs may in fact constitute "ships" in the modern use of the term. Commentators may be right to suggest that such a determination, and the assignment of maritime rights it entails, should rest with the individual flag-state.[97] Given the risks they pose, however, their introduction may disrupt the balance between exclusive and inclusive rights, thereby generating counterclaims by affected states. Although international law should certainly govern such vessels,[98] the norms in UNCLOS are neither *a priori* nor enduring. Once the balance of interests is disrupted, the process of claims and counterclaims will guide the regime's evolution through legislative initiative, interpretation, or practice to accommodate the changing circumstances.

1. Benefits and Risks of Unmanned Maritime Vessels

The absence of a crew reduces costs of shipping and increases cargo

90. Given this Article's focus on crew presence, the term "Unmanned Maritime Vessels" is appropriate. For other terms that have been proposed, see Natalie Klein, *Maritime Autonomous Vehicles within the International Law Framework to Enhance Maritime Security*, 95 INT'L L. STUD. 244, 248-51 (2019).

91. *See, e.g.*, Veal, *supra* note 15, at 26; Allen, *supra* note 12, at 5-6, 17-18; Oliver Daum, *The Implications of International Law on Unmanned Naval Craft*, 49 J. MARITIME L. & COMMERCE 71, 75-85 (2018); CMI, INTERNATIONAL WORKING GROUP POSITION PAPER ON UNMANNED SHIPS AND THE INTERNATIONAL REGULATORY FRAMEWORK 3 (2018), available at https://comitemaritime.org/wp-content/uploads/2018/05/CMI-Position-Paper-on-Unmanned-Ships.pdf.

92. Allen, *supra* note 12, at 31.

93. *See, e.g.*, Veal, *supra* note 15, at 26; Allen, *supra* note 12, at 5-6, 17-18; Daum, *supra* note 91, at 75-85; CMI, *supra* note 91, at 3.

94. Allen, *supra* note 12, at 16.

95. Veal, *supra* note 15, at 27.

96. *See* Daum, *supra* note 91, at 90.

97. Allen, *supra* note 12, at 40; Veal, *supra* note 15, at 26.

98. *See* Harold Hongju Koh, *The Emerging Law of 21st Century War*, 66 EMORY L. J. 487 (2017) (arguing that new technologies should not produce legal voids); *see also* Veal, *supra* note 15, at 27.

capacity.[99] By reducing the waste produced by personnel, and increasing the efficiency of transportation,[100] UMVs will diminish marine pollution and greenhouse gas emissions. As such, UMVs will assist in mitigating the effects of climate change.[101] The reduced environmental impact will be increasingly important in the Arctic, which is significantly exposed to adverse environmental effects. The use of UMVs would decrease risks by reducing accidents due to human error, increasing efficiency, and eliminating crew waste.[102]

On the other hand, reliance upon technology and communication for navigation and maintenance will expose UMVs, and thus states, to increased risks. First, UMVs are increasingly exposed to cyber-attacks, which may undermine their ability to navigate.[103] In the absence of a crew, it would be difficult to regain control or conduct repairs, and the more remote and inaccessible the area in which UMVs operate, the slower and more difficult shore-based support will become should onboard systems fail or be commandeered.[104] Although some have pointed out that UMVs would reduce accidents from human error or fatigue,[105] the absence of a crew will increase risks from incidents due to malfunctions or cyber-attacks, which may manifest themselves in collisions or discharges within spatial areas subject to coastal state jurisdiction.[106]

In addition, the absence of a crew implicates various security concerns. Some have proposed that the absence of a crew to ransom will reduce the risks from piracy, particularly given that UMVs could be constructed to mitigate the possibility of boarding or capture.[107] On the other hand, malicious actors have been known to employ new technologies to their advantage.[108] It is thus likely that UMVs will be employed by pirates or smugglers, and perhaps used to conduct illegal, unreported, and unregulated (IUU) fishing without personal exposure. Of course, navies and coast guards could employ such instruments to augment enforcement and rescue operations.[109]

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99. *See* Pritchett, *supra* note 15, at 201; Simon Baughen, *Who is the Master Now? Regulatory and Contractual Challenge of Unmanned Vessels*, *in* NEW TECHNOLOGIES, ARTIFICIAL INTELLIGENCE AND SHIPPING LAW IN THE 21ST CENTURY 129, 129 (Baris Soyer & Andrew Tettenborn eds., 2020).

100. *See* Pritchett, *supra* note 15, at 201.

101. *See* MUNIN Project, Eur. Comm'n, *Towards Unmanned Cargo Vessels for More Sustainable Maritime Transport*, (Apr. 25, 2017), https://cordis.europa.eu/article/id/169600-towards-unmanned-cargo-vessels-for-more-sustainable-maritime-transport.

102. *See* Pritchett, *supra* note 15, at 201; Coito, *supra* note 12, at 296.

103. Coito, *supra* note 12, at 305; DMA REPORT, *supra* note 87, at 36.

104. Baris Soyer, *Autonomous Vessels and Third-party Liabilities: The Elephant in the Room*, *in* NEW TECHNOLOGIES, ARTIFICIAL INTELLIGENCE AND SHIPPING LAW IN THE 21ST CENTURY 105, 111 (Baris Soyer & Andrew Tettenborn eds., 2020); Baughen, *supra* note 99, at 130; Ling Zhu & Richard Xing, *Probing Civil Liability Insurance for Unmanned/Autonomous Merchant Ships*, *in* INSURTECH: A LEGAL AND REGULATORY VIEW 343, 355 (Pierpaolo Marano & Kyriaki Noussia eds., 2020).

105. Coito, *supra* note 12, at 296; Pritchett, *supra* note 15, at 201.

106. *See* Soyer, *supra* note 104, at 111; Baughen, *supra* note 99, at 130; Klein, *supra* note 90, at 29.

107. ILYA SHIPUNOV ET AL., ABOUT THE PROBLEMS OF ENSURING INFORMATION SECURITY ON UNMANNED SHIPS 339 (2019), available at https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8657219; Zhu & Xing, *supra* note 104, at 355.

108. Coito, *supra* note 12, at 285-95.

109. *See generally id.*

2. Unmanned Vessels and Mare Liberum

UMVs will produce conflicting incentives for states with respect to preserving elements of *mare liberum*, particularly within their maritime zones. As mentioned above, exclusive rights for coastal states are accompanied by rights of all states in the same spatial area as well as obligations to protect and preserve the marine environment. The regime is predicated upon the interests and capabilities of states to exercise their jurisdiction,[110] while balancing between security interests and access to resources by the various participants.[111] At the time that UNCLOS was negotiated, ships were manned, and there was little appreciation of the risks posed by UMVs to military and economic interests.[112] Although UNCLOS does not allow states to exclude innocent or transit passage due to manning or construction features,[113] the risks posed by UMVs may raise claims to alter the existing regime. In the absence of a crew, the coastal state will have limited ability to enforce its laws and regulations and to safeguard its security, while accidents that could have otherwise been prevented by the crew may present environmental, economic, and security risks.

The same holds true with respect to the contiguous zone and the EEZ. In the contiguous zone, the coastal state possesses the power to enforce and prevent violations of its protective laws and regulations.[114] But the effectiveness of such powers relies on the ability to deter or detain. In the absence of a crew, it is unclear whether the state would be able to identify the perpetrators; even if it could, jurisdiction is uncertain.[115] Similarly, with respect to the EEZ, Article 73 specifies the powers of the coastal state over violations of its laws governing the exploitation of living resources,[116] and Part XII elaborates on these powers with respect to the preservation of the marine environment.[117] From the perspective of coastal states, the introduction of UMVs severely undermines the effectiveness of such powers. Granting UMVs the same navigation rights within the EEZ will therefore undermine the coastal state's ability to enforce its exclusive jurisdictions, protect its environment, and safeguard its territory and territorial sea.

But even disregarding the enforcement capabilities of coastal states, the absence of a crew undermines the ability of operators and owners to fix malfunctions or confront cyber-attacks.[118] By exercising inclusive rights within the territorial sea or EEZ, a UMV would thus expose the coastal state to increased risks to the environment, food supply, and traffic. Coastal states may therefore argue that the deployment of UMVs in their EEZ fails the "due regard"

110. *See* Posner & Sykes, *supra* note 7, at 569-70, 595.
111. *See* Charney, *supra* note 4, at 865-66.
112. *See* Veal, *supra* note 15, at 27.
113. *See* UNCLOS, *supra* note 4, art 21(2); Chircop, *supra* note 10, at 17.
114. *See* UNCLOS, *supra* note 4, art 33; Caminos, *supra* note 34.
115. *See* Coito, *supra* note 12, at 291; Chircop, *supra* note 10, at 17; DMA REPORT, *supra* note 87, at 28.
116. *See* UNCLOS, *supra* note 4, art. 73.
117. *See id.*, pt. XII.
118. *See* Soyer, *supra* note 104, at 111; Baughen, *supra* note 99, at 130.

obligation given the increased risks and available alternatives.[119] Even though an international tribunal or the ICJ may reject such a claim, an obligation to consult with the coastal state[120] may produce agreements to accept certain limitations on UMVs, either generating state practice or amendments.

In any event, risks posed by UMVs will likely precipitate claims by states to prevent or otherwise impose limits on such vessels within their EEZs or territorial seas. Coastal states have already been laying claims to expand their jurisdiction in maritime zones. Whether by requiring permits for innocent passage or claiming to prevent intelligence gathering or military maneuvers, excessive claims have been made by states to safeguard their security and economic interests.[121] Coastal states have been engaged in what can be accurately described as "creeping jurisdiction,"[122] or excessive claims.[123] Yet such characterizations expose a possibly unjustified bias against such claims. Not only is UNCLOS founded on the "strong preference for carving up the natural resources of the sea into different regulatory domains controlled by different states,"[124] but as technological innovation reduces the costs of ocean-based activities, a certain increase in exclusive claims may ensue.[125]

Many "excessive" claims expand jurisdiction to safeguard essential interests from activities within such spatial areas perceived as threats.[126] It thus takes little imagination to realize that the risks posed by UMVs and the need to cope with the dire effects of climate change on the sustainability of fisheries will precipitate similar claims to further confine *mare liberum*.

B. Evolving Geographical Circumstances

Maritime jurisdiction is tied to the land that generated it. Yet the relative stability of geography assumed when UNCLOS was negotiated[127] is evaporating.

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119. *See* Chagos Marine Protected Area Arbitration (Mauritius v. U.K.), Award, ¶ 519 (Mar. 18, 2015) (attempting to elaborate the rather vague due regard obligation).

120. *See id.* (suggesting an obligation to consult with the coastal state).

121. *See* Kraska, *Excessive*, *supra* note 4, at 167-87; Klein, *supra* note 90, at 246; Raul (Pete) Pedrozo, *Military Activities in the Exclusive Economic Zone: East Asia Focus*, 90 INT'L L. STUD. 514, 521-22 (2014); J. ASHLEY ROACH & ROBERT W. SMITH, EXCESSIVE MARITIME CLAIMS ch. 14 (3d ed. 2012); ELINA SILVA PEREIRA & MARTA CHANTAL RIBEIRO, UNMANNED VESSELS & UNMANNED MARITIME VEHICLES: PROSPECT OF A LEGAL FRAMEWORK IN THE INTERNATIONAL AND THE PORTUGUESE CONTEXT 63-64 (2020). The United States conducts and publishes reviews of excessive claims made by states which can be accessed at U.S. Dep't of State, *Limits in the Seas*, available at https://www.state.gov/limits-in-the-seas/.

122. Robin Geiß & Christian Tams, *Non-Flag States as Guardians of the Maritime Order: Creeping Jurisdiction of a Different Kind?*, *in* JURISDICTION OVER SHIPS, POST-UNCLOS DEVELOPMENTS IN THE LAW OF THE SEA 19, 24 (Henrik Ringbom ed., 2015); Erik J. Molenaar, *New Maritime Zones and the Law of the Sea*, *in* JURISDICTION OVER SHIPS, POST-UNCLOS DEVELOPMENTS IN THE LAW OF THE SEA 249, 249 (Henrik Ringbom ed., 2015).

123. *See* Kraska, *Excessive*, *supra* note 4.

124. Posner & Sykes, *supra* note 7, at 595.

125. *See id.*

126. *See* PEREIRA & RIBEIRO, *supra* note 121, at 63-64; Kraska, *Excessive*, *supra* note 4, at 167, 173.

127. *See* Kerrylee Rogers & Clive Schofield, *Responding to Changing Coasts: The Need for Fixed and Flexible Limits and Boundaries in the Face of Sea-Level Rise*, *in* OCEAN LAW AND POLICY: 20 YEARS UNDER UNCLOS 419, 436 (Herry Scheiber et al. eds., 2017); ILC, *Sea-level*, *supra* note 11, ¶ 104.

Two sets of claims stemming from changes in *terra firma* challenge the current balance: (1) claims to retain jurisdiction from formerly eligible land; and (2) claims for jurisdiction from otherwise ineligible land. In other words, rising sea levels generate claims from features that are arguably losing their entitlement, while technological innovation produces claims from features that would otherwise be ineligible due to artificial manipulation. Changes in land will precipitate claims to attune the distribution between inclusive and exclusive use to modern interactions and circumstances.

Scholarship tends to distinguish between these changes to the *terra firma* or propose ad hoc adjustments. Although equitable considerations could justify a distinct treatment, it is crucial to recognize that both sets of claims will undermine the stability of the land as a source of ocean rights. The "package-deal" nature of UNCLOS suggests that it would be imprudent to consider one set of changes to the *terra firma* as affecting the evolution of the regime while disregarding the other. A more effective approach, as this Article proposes, is to balance such claims as part of a "new package-deal."

1. Effects of Climate Change on Land

The anticipated increase in global temperatures risks significantly increasing sea levels and adverse effects to marine biodiversity.[128] The increased sea levels alter the *terra firma* in three ways: (i) baselines become inconsistent with the rules; (ii) islands used to generate entitlement are no longer eligible as they have either submerged or become "rocks" unable to support human habitation or economic life; and (iii) a state's entire territory could be rendered uninhabitable.[129] Each of these outcomes already generates claims relating to the equitability of the distribution between exclusive and inclusive jurisdictions over the oceans, undermining the effectiveness of natural land as a source of title.

i. Baselines

Rising sea levels will erode coastlines leading to the retreat of the lower water line or the submergence of features used as basepoints for regular, straight, or archipelagic baselines. The prevailing approach in scholarship is to treat baselines as ambulatory.[130] According to this approach, because maritime jurisdiction is tied to the land that generated it, changes in the *terra firma* should translate to changes in the state's baselines. Recently, Kate Purcell challenged this theory by arguing that international law distinguishes between the generation and preservation of an entitlement, with the latter remaining unaffected by geographical changes.[131] This approach, however, disregards the fact that the

128. *See* IPCC, *Oceans Report*, *supra* note 9, ch. 4; *see also* Helmut Hillebrand et al., *Climate Change: Warming Impacts on Marine Biodiversity*, *in* HANDBOOK ON MARINE ENVIRONMENT PROTECTION 353 (Salomon et al. eds., 2018).

129. *See* Soons, *supra* note 14, at 216; Caron, *supra* note 14, at 634-39; PURCELL, *supra* note 14, at 217, 231; Gagain, *supra* note 72, at 98, 115; STOUTENBURG, *supra* note 14, at 376-77.

130. *See* Caron, *supra* note 14, at 634; Soons, *supra* note 14, at 216; ILC, *Sea-level*, *supra* note 11, ¶¶ 68-82.

131. *See generally* PURCELL, *supra* note 14.

formulation of the rules governing maritime jurisdiction is intended to ameliorate externalities based on existing realities rather than simply to promote stability. Scholars, as well as a recent report of the International Law Commission (ILC) working group on rising sea levels, have proposed that baselines previously submitted to the United Nations should remain fixed irrespective of geographical changes.[132] This preoccupation with stability and alleviating the effects of rising sea levels disregards the effects of such changes on the balance between inclusive and exclusive uses as well as the effects of such disruption on the interests of various participants.[133]

The effects of retreating baselines on policy choices need to be treated with respect to (a) distance-based jurisdiction; (b) delimitation treaties; and (c) the OCS and the Area. As explained below, the retreat of baselines will produce a destabilizing effect on the equitability of the distribution between inclusive and exclusive uses, while artificially preserving the baselines will undermine the interests of certain participants, requiring a balance to be struck for it to gain broad support and compliance.

a. Distance-based Jurisdiction

Fixed baselines entail the proposition that a spatial area remains under exclusive jurisdiction rather than reverting to a more inclusive regime. Although frozen baselines would simply maintain the existing situation, and neither the state nor the international community would benefit,[134] the inherent assumption is that other states would accept such an amendment without any concessions in return. Yet the contrary interests indicate that a balancing exercise would be required for such a proposition to gain consensus and support.

By retaining EEZ jurisdiction with the coastal state, the international community arguably would even benefit by preventing the tragedy of the commons from extending to such waters.[135] But such a conclusion disregards two important realities. First, with the depletion of ocean fisheries exacerbated by climate change, some participants will lay claims to revert the exclusivity of such areas to access resources. Second, as the EEZ includes the shelf, maintaining exclusivity reduces the potential increase of the Area, which adversely affects all other states.

Retaining territorial seas, however, disrupts the balance under UNCLOS. Assuming that the prescribed spatial extent of such powers (twenty-four nautical miles with the contiguous zone) is sufficient to protect the security of the state, retaining such powers over the waters would confine the freedom of navigation

132. *See* ILC, *Sea-level*, *supra* note 11, ¶ 104; Caron, *supra* note 14, at 648; STOUTENBURG, *supra* note 14, at 194; PURCELL, *supra* note 14, at 284.

133. Although it is beyond the scope of this Article, the conflicts of the late twentieth and early twenty-first century may indicate that the principles of territorial stability and *uti possidetis juris* are rather ineffective, and in some cases counterproductive, norms of international law. This is especially true when these principles are insisted upon to control interactions between participants irrespective of the changing realities.

134. *See* ILC, *Sea-level*, *supra* note 11, ¶ 218.

135. *See, e.g.*, *id.*, ¶¶ 180-86, 190.

absent cause should coastlines retreat. If the coastlines retreat by one nautical mile, the effects would be minimal, yet if coastlines retreat by five or ten nautical miles, maintaining the baselines would *unnecessarily* extend the regime of innocent passage over vast ocean spaces. Retaining territorial sea jurisdiction absent cause undermines the interests of other users, primarily the naval powers. In fact, retaining the jurisdiction when the state's land and population have retreated landward may also undermine the common interest. It risks negating the interests and capabilities of states to enforce exclusive rights and obligations within such maritime areas given the distance from land, while denying enlarged inclusive rights to others. As proposed below, shifting the territorial sea under certain circumstances will therefore attune the balance under UNCLOS to the changing geographical realities.

b. Delimitation Treaties

Scholars have considered the effects of changes in land on delimitation treaties.[136] While most of them seem to agree that changes in baselines would affect distance-based jurisdiction facing the high seas, where delimitation treaties are concerned, scholarship is consistent in its approach that treaties remain unaffected.[137] The same position was espoused by the recent report of the ILC and the several countries whose comments were reported therein.[138]

Similarly to the maritime jurisdiction itself, divisions of jurisdiction are predicated on the interests and capabilities of participants to exercise them. Although some states prefer stability, the retreat of baselines will disrupt the equitability of some treaties distributing jurisdiction over the oceans, precipitating claims for their adjustment. When coastlines retreat, state A may lose not only the interest but also the capability to enforce its rights and obligations in a given area. If the opposing or adjacent state B then possesses greater incentives and capabilities to exercise jurisdiction, retaining the division of jurisdiction between them would undermine the common interest by enshrining a less effective governance.

It is therefore imprudent to interpret the rules governing treaties as precluding the termination of a jurisdictional division in light of changing realities. The rules governing treaty interpretation themselves were adopted in 1966, long before UNCLOS was signed and in a period when the stability of the land was assumed. As the Vienna Convention on the Law of Treaties (VCLT) itself is predicated upon the interactions and realities of its time, interpreting it in a manner that precludes solutions augmenting the common interest in new contexts is unproductive. As a treaty of continuing duration, the VCLT must be interpreted in an evolutionary manner, attuned to the changing realities

136. *See, e.g.*, STOUTENBURG, *supra* note 14, at 136-69; Lisztwan, *supra* note 14, at 192-99; PURCELL, *supra* note 14, at 135-46; *see also* Vincent P. Cogliati-Bantz, *Sea-Level Rise and Coastal States' Maritime Entitlements*, 7 J. TERRITORIAL & MARITIME STUD. 86 (2020).

137. *See* STOUTENBURG, *supra* note 14, at 136-39; Soons, *supra* note 14, at 228; Lisztwan, *supra* note 14, at 192-99; PURCELL, *supra* note 14, at 135-46.

138. *See* ILC, *Sea-level*, *supra* note 11, ¶¶ 105-41.

surrounding the treaties whose interpretation it governs.

The division of maritime jurisdiction among participants under UNCLOS is not intended to produce stability but rather to provide for an optimum balance between *mare liberum* and *mare clausum* in a given area. While the stability of such division may be important, when it no longer fulfills its objectives, its retention undermines the common interest. As explained below, a proper interpretation of the rules governing treaties would allow an interested participant to dispense with this division of jurisdiction when the changing circumstances undermine its equitability. Yet even if it were interpreted otherwise, preserving the balance between *mare liberum* and *mare clausum* as well as the interests of the international community dictates that stability should give way to effectiveness with regards to the exercise of jurisdiction by participants.

Although maritime delimitations are called "boundaries," these are far from borders in the terrestrial sense, and they do not warrant the same protection and stability. Article 15, on territorial sea delimitation, presumes that equidistance should apply unless the parties decide otherwise given special circumstances. Articles 74 and 83, governing the delimitation of sovereign rights, in contrast, emphasize that the division's objective is to "achieve an equitable solution." This distinction makes sense as delimitations involving the EEZ and continental shelf are simply exercises in which states divide economic rights and certain jurisdictions. But if the circumstances change, and the result is no longer equitable, there is a real question as to whether the state should be precluded from terminating the treaty.

Even though scholarship accepts that baselines are ambulatory, the overwhelming view is that a state may not lawfully claim that rising sea levels justify invoking the right to terminate the treaty due to a fundamental change in circumstances,[139] pursuant to Article 62 of the VCLT.[140] The primary reason suggested is that the treaty "established a boundary" and is thus excluded based on Article 62(2)(a); this claim is based firmly on the ICJ's dicta in *Aegean Sea Continental Shelf*.[141] In 1978, long before rising sea levels became a reality, and before UNCLOS was even signed, the ICJ stated that "[w]hether it is a land frontier or a boundary line in the continental shelf that is in question, the process is essentially the same, and inevitably involves the same element of stability and permanence, and is subject to the rule excluding boundary agreements from fundamental change of circumstances.[142]

The same position was espoused by the ad-hoc tribunal in *Bangladesh v.*

139. *See* STOUTENBURG, *supra* note 14, at 136-39; Soons, *supra* note 14, at 228; Lisztwan, *supra* note 14, at 192-99; PURCELL, *supra* note 14, at 135-146; ILC, *Sea-level*, *supra* note 11, ¶ 141.

140. *See* Vienna Convention on the Law of Treaties art. 62, May 23, 1969, 1155 U.N.T.S. 331 [hereinafter VCLT].

141. *See, e.g.*, Lisztwan, *supra* note 14, at 186 (suggesting the decision alleviates the need to consider this question).

142. Aegean Sea Continental Shelf (Greece v. Turk.), Judgment, 1978 I.C.J. Rep. 3, ¶¶ 35-36 (Dec. 19).

India.[143] Irrespective of the Court's dicta, this proposition is quite disputable for a few reasons. First, the ICJ's statement was made with consideration of only the 1958 Convention on the Continental Shelf, which provided that shelf delimitation be done through equidistance,[144] a role UNCLOS later reserved only for the territorial sea. Furthermore, as a recent commentary on the VCLT explains, the rationales of the exclusion in Article 62(2)(a) of the VCLT are less applicable to the delimitation of the EEZ and continental shelf.[145]

The commentary explains that the exclusion relates to the preservation of minimum order. It is founded on the "sanctity" of boundary treaties as the "cornerstone of international peace and security"[146] and intended "to protect the territorial integrity of States by maintaining the security of boundaries."[147] As the commentary explained, with UNCLOS signed, the ILC refused to interpret it, noting "that only the outer limit of the territorial sea was a true limit of the territory of a State but not other lines such as those delimiting the continental shelf or the exclusive economic zone."[148] While the commentary assumes the provision's applicability to treaties delimiting territorial seas, it questions its applicability to delimitations of sovereign rights.[149]

Although the commentary's analysis is cogent and convincing, questions arise as to whether the conclusion with respect to the territorial sea remains relevant. Even though changes in maritime boundaries may affect contracts for the exploitation of natural resources, the lawfulness of artificial installations, and even resources essential for the population, it is quite distinguishable from having the people themselves revert to the sovereignty of another state. Altering sovereignty over land territory affects the core of the international order, while redistribution of sovereign rights over the oceans should only achieve, and arguably maintain, an "equitable solution." But even with respect to a territorial sea delimitation, the termination of a delimitation treaty would only revert the division to an equidistance. As the territorial sea is intended to provide a security buffer, even if the equidistance were to move due to rising sea levels, arguing that a change would be manifestly "unfair" or destabilize the minimum order is hardly convincing.

In addition to Article 62 of the VCLT, Article 48, titled "Error," stipulates, in relevant part, that a state may invalidate its consent to a treaty due to an error relating to "a fact or situation which was assumed by that State to exist at the time when the treaty was concluded and formed an essential basis of its consent to be bound by the treaty."[150] As the commentary explains, an error is assessed

143. The Bay of Bengal Maritime Boundary Delimitation (Bangl. v. India), Award, ¶¶ 216-17 (July 4, 2014).

144. Convention on the Continental Shelf, Apr. 29, 1958, art. 6, 433 U.N.T.S. 311.

145. VIENNA CONVENTION ON THE LAW OF TREATIES, A COMMENTARY 1169 (Oliver Dörr & Kirstin Schmalenbach eds., 2018).

146. *Id.* at 1165.

147. *Id.* at 1168.

148. *Id.*

149. *Id.* at 1169.

150. VCLT, *supra* note 140, art. 48.

objectively, but from the perspective of the erring state.[151] Such errors must be with respect to a factual matter that formed an "essential basis of that State's consent,"[152] but need not "be the sole factor inducing the erring State to consent" to the treaty.[153] Given the overwhelming use of equidistance in delimitation treaties,[154] it is without question that the *terra firma* constitutes an essential element of the state's consent to be bound by a delimitation treaty, even if other factors remain relevant. The proposition that the other contracting party possesses a valid source of title to the same maritime area underlies the consent of a state to delimit its plenary source of legal title with that other state. Particularly for treaties signed before the United Nations Framework Convention on Climate Change, a state may plausibly argue that it was not aware of the prospect of the other state losing its entitlement. It is thus arguable that a given delimitation treaty is founded upon a mistaken presumption of stability and continuity with respect to the other state's legal source of title to the same spatial area.

Commentators and scholars have pointed out that destabilizing delimitation treaties may precipitate disputes over resources.[155] As explained above, however, it is hardly self-evident that such "boundaries" warrant the same protection from changing circumstances as terrestrial borders. It would be unproductive for international law to cement a division of maritime jurisdiction between states in the face of changing geographical realities. If a delimitation, once equitable and effective, prescribes jurisdiction to a participant now lacking the interest and capabilities to enforce it, the common interest would suffer, unless the balance between the participants is restored. Such restoration, however, requires an interested participant to terminate the division, forcing its renegotiation. Any rules to this effect must, however, be formulated to protect weaker parties in any renegotiation process.

c. Outer Continental Shelf and the Area

Retreating baselines risk undermining the balance between broad-margin and narrow-margin states. In contrast to the distance-based continental shelf rights of narrow-margin states, OCS entitlements (i.e., beyond 200 nautical miles and up to the continental margin) are based on geology and geomorphology. Therefore, while narrow-margin states may lose entitlement in favor of the international Area due to sea-level rise, broad-margin states' continental shelf entitlement will remain immune to changes in baselines if the outer limit was

151. *Id.* at 892.

152. *Id.* at 890.

153. *Id.* at 891.

154. YOSHIFUMI TANAKA, PREDICTABILITY AND FLEXIBILITY IN THE LAW OF MARITIME DELIMITATION 190-91 (2d. ed. 2019).

155. *See* Gagain, *supra* note 72, at 115; Lisztwan, *supra* note 14, at 156; Caron, *supra* note 14, at 647-48.

established based on recommendations issued by the CLCS.[156] Yet this would discriminate between broad-margin and narrow-margin states with only the former's rights immune to such changes in the land.[157]

It has been suggested that the CLCS could issue recommendations on limits less than 200 nautical miles from coasts, thus allowing narrow-margin states to secure them against sea-level rise.[158] As further elaborated below, however, this proposition counteracts the CLCS's role as an institution established to protect the Area, not to enshrine an encroachment on it. In any event, this advantage of broad-margin states will further destabilize the balance in UNCLOS and will generate claims by narrow-margin states.

ii. Islands and Rocks

The effects of rising sea levels on insular features significantly undermine the balance between inclusive and exclusive access to ocean resources. The insular location of such features exacerbates the effects of the issues discussed above. This is especially true with respect to insular features located far away from other eligible land, thus generating significant exclusive jurisdiction of their own on account of another state or the international community. Most scholars, however, support maintaining the feature's status irrespective of rising sea levels.[159] This proposition may generate opposition and fail to provide for the optimum rule.

a. Distance-based Jurisdiction

Propositions to retain rights of features that have turned to "rocks" or been entirely submerged are founded primarily on equitable concerns but may, under certain circumstances, provide a benefit for the international community with respect to environmental and sustainability concerns. For small island states, the EEZ and continental shelf entitlements secure access to natural resources that are essential for the population's wellbeing and food supply.[160] Because these participants are not at fault for rising sea levels, it is arguably inequitable for them to lose resource rights in favor of other states, which potentially have a greater responsibility for the crisis.[161] Taken together with the depletion of ocean fisheries due to climate change and unsustainable fishing, such retention of jurisdiction would, however, generate counter-claims by other states, and

156. Caron, *supra* note 14, at 635; Soons, *supra* note 14, at 217-18; PURCELL, *supra* note 14, at 102; Bernard H. Oxman, *Special Address: On the Challenges to Stability and to the Rule of Law in Implementation of UNCLOS*, *in* OCEAN LAW DEBATES 276, 284 (Harry Scheiber et al. eds., 2018). *But see* PURCELL, *supra* note 14, at 240 (with respect to a submerged feature).

157. Soons, *supra* note 14, at 217.

158. STOUTENBURG, *supra* note 14, at 134.

159. *See, e.g.*, *id.* at 155; PURCELL, *supra* note 14, at 217, 231; ILC, *Sea-level*, *supra* note 11, ¶ 218.

160. *See* Caron, *supra* note 14, at 650; STOUTENBURG, *supra* note 14, at 75.

161. *See* Ann Powers, *Sea-Level Rise and Its Impact on Vulnerable States: Four Examples*, 73 LA. L. REV. 151 (2012); Molenaar, *supra* note 122, at 277.

especially those least exposed to potential losses in entitlement.[162] Even participants exposed to rising sea levels may be willing to sacrifice some of their own entitlements for the enjoyment of inclusive use of other areas currently subject to exclusive use.[163]

Protecting the common interest requires that any retention of jurisdiction ensures that the coastal state maintains the ability to supervise the exploitation to guarantee sustainability and fulfill the accompanying environmental obligations. If the EEZ regime is retained absent the population or economic life, it is unclear whether the state would possess such capabilities or interest to execute them. Claims regarding submerging features must therefore be distinguished between those concerning features near coasts or belonging to small island states as compared to remote islands belonging to far-removed powers. States, especially developed ones, possess control over mid-ocean islands far removed from their land territory.[164] Although the economic interests of these states would also be undermined due to the loss of sovereign rights, where equitability is concerned, such claims warrant weaker protection than those coming from small island states, as the former bear most responsibility for the climate crisis. On the other hand, the tragedy of the commons over the oceans indicates that retaining exclusive jurisdiction may provide benefits as it generates incentives for states to protect the marine environment and regulate fishing practices.[165] Powerful participants may possess both the interest and the capabilities to exert power for the protection and preservation of the marine environment around a remote feature even if the feature has lost its ability to sustain human habitation.

Most proponents of preserving entitlements disregard the unique question of the territorial sea and focus instead on the economic rights of the EEZ and continental shelf.[166] Their disregard likely stems from the fact that a "rock" is still entitled to a territorial sea.[167] Although equitable, economic, and environmental reasons may justify the retention of exclusive sovereign rights, retaining territorial sea powers from completely submerged features is devoid of *effet utile*. Without a land territory to protect, subjecting parts of the open ocean to a regime of innocent passage or allowing a state to enforce its domestic laws therein, simply because there "used to be" land there, is illogical. While a freeze on baselines, either insular or continental, may have legitimate reasons when it comes to balancing between economic and environment jurisdictions, when it comes to balancing security powers and the freedom of navigation, the approach should be different.

162. *See* Lisztwan, *supra* note 14, at 170.

163. STOUTENBURG, *supra* note 14, at 192.

164. *See, e.g.*, PROELSS, *supra* note 39, at 872.

165. *See generally* Posner & Sykes, *supra* note 7.

166. David Caron questioned whether an ambulatory or frozen territorial sea is beneficial but did not comment further. *See* Caron, *supra* note 14, at 652.

167. UNCLOS, *supra* note 4, art. 121.

b. Delimitation Treaties

The submergence of a feature could significantly undermine a delimitation's equitability and effectiveness. If a feature facing a state has submerged or has become a "rock," it could gain significant jurisdiction by terminating the treaty. Even if such features were given a reduced effect or were enclaved, they would still affect the distribution of ocean rights between states.

Assume that an island of State A was located within twenty nautical miles off the coast of State B, and an equidistance delimitation provided each state a ten-nautical-mile territorial sea. If State A's feature submerged completely, it has arguably lost not only the source of title but the interest to enforce its territorial sea powers, which, in turn, increases State B's exposure to risks. Should State B's security jurisdiction be forever limited to ten nautical miles? Similarly, if the island was 100 nautical miles from State B and became a "rock," will State B forever be bound to divide its otherwise plenary EEZ with State A and even respect State A's territorial sea if the feature submerges completely?

Given such effects, the submergence of the relevant features or their loss of eligibility under Article 121(3) will generate claims by the other contracting party to redistribute the jurisdiction. As such a situation would not revert the area to the high seas, there is no risk for the tragedy of the commons to undermine the interests of the international community. Critically, to optimize the common interest, it is important to avoid situations in which a delimitation retains the jurisdiction with a participant now lacking incentives to monitor and enforce it.

c. Outer Continental Shelf and the Area

The balance between broad-margin and narrow-margin states is significantly disrupted when a feature becomes a "rock" or submerges. With respect to its mere transformation into an ineligible "rock," most scholars agree that OCS entitlement should remain intact.[168] However, when the entire feature is submerged, there is disagreement on the entitlement's future.[169] As elaborated further below, it is doubtful that the CLCS process should be employed to counteract its own *raison d'être*.[170]

It is important to appreciate that while the tragedy of the commons may extend to water resources, thus justifying the retention of exclusive economic rights and environmental powers, the same does not apply to the continental shelf. Any loss of entitlement in this regard will augment the Area and benefit the international community. There are thus strong reasons to separate between the water column and seabed jurisdiction when it comes to insular features that have lost their eligibility or submerged completely.

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168. STOUTENBURG, *supra* note 14, at 155; PURCELL, *supra* note 14, at 217, 231, 284; ILC, *Sea-level*, *supra* note 11, ¶ 218.

169. Caron, *supra* note 14, at 634-35; Oxman, *supra* note 156, at 284; PURCELL, *supra* note 14, at 240; Soons, *supra* note 14, at 218.

170. *See also* PURCELL, *supra* note 14, at 240.

iii. Submerged States

Small island states are exceptionally vulnerable to rising sea levels. Even as they share little responsibility for the climate crisis, they possess limited wealth and capabilities to avert the dire results.[171] Islands composing these states could lose eligibility and then submerge completely,[172] and it is unclear whether this outcome is preventable.[173] This has propelled scholars to consider whether such submerged entities could preserve their statehood and if so, whether they could retain maritime jurisdiction.[174] Commentators suggest that submerged states should be allowed to retain their statehood to facilitate the social and cultural cohesion of the diaspora and retain maritime rights to natural resources that can be outsourced to generate wealth.[175] To be sure, the international community must take action to avert these dire effects and provide assistance. But the retention of maritime rights entails significant risks and will likely generate counterclaims by other states, primarily the naval powers, to reassert inclusive rights over such maritime spaces and resources.

It is important to recognize that should "submerged states" be allowed to retain exclusive rights absent the *de facto* ability, or interest, to effectuate the accompanying duties to protect the marine environment and sustainability, exploitation alone may disrupt the balance and undermine the common interest. Although "submerged states" could outsource or lease rights to exploit the resources,[176] the exploitation of such resources could pose significant risks to the marine environment and sustainability absent the ability and interest to exercise the duties of the coastal state in such a regard.[177] Such a proposition would allow "submerged states" to reap the benefits without sharing the corresponding obligations and thus disrupt the objectives of the obligations.

The recent report by the ILC working group on rising sea levels implied that by transforming EEZs into high seas, the end result would remain the same, as no other state would have exclusive jurisdiction.[178] Such reasoning, however, is problematic for "submerged states." The "submerged state" may have an interest to overexploit rather than protect the marine environment, and perhaps more importantly, it would lack the ability to enforce its regulations. In addition, subjecting the spatial area to exclusive environmental jurisdiction will preclude certain measures by participants interested in acting to promote environmental or sustainability objectives.[179]

171. Molenaar, *supra* note 122, at 277; Powers, *supra* note 161.

172. *See* Gagain, *supra* note 72, at 91-93; STOUTENBURG, *supra* note 14, at 376-77.

173. Caron, *supra* note 14, at 639-41.

174. *See, e.g.*, STOUTENBURG, *supra* note 14, at ch. 6; Maxine Burkett, *The Nation Ex-Situ: On Climate Change, Deterritorialized Nationhood, and the Post-Climate Era*, 2 CLIMATE L. 345 (2011); *see also* ALEJANDRA TORRES CAMPRUBI, STATEHOOD UNDER WATER (2016).

175. STOUTENBURG, *supra* note 14, at 429; *see also* Caron, *supra* note 14, at 650.

176. *See* Caron, *supra* note 14, at 650; STOUTENBURG, *supra* note 14, at 385.

177. *See* Lisztwan, *supra* note 14, at 169.

178. *See* ILC, *Sea-level*, *supra* note 11, ¶¶ 180-82.

179. Recently, in Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicar. v. Colom.), Judgment, Apr. 21, 2022, ¶ 95, the International Court of Justice emphasized the

Finally, economic and security jurisdictions must be distinguished. Even if a "new package-deal" were to recognize economic rights for "submerged states," allowing them to retain territorial sea sovereignty would unnecessarily confine elements of the *mare liberum*. Such a proposition disrupts the rationale behind the confinement of inclusive use, thus undermining the common interest and generating counterclaims.

* * *

This Section has outlined the various claims and counterclaims that rising sea levels will produce with respect to ocean jurisdiction. These "natural" changes to the *terra firma* will produce conflicting interests for participants. To promote the common interest, it is important to ensure that exclusive jurisdiction is retained only when a participant possesses the ability and incentives to supervise exploitation to ensure sustainability and implement powers intended to protect the marine environment. To do otherwise would disrupt the balance between exclusive and inclusive rights and obligations underlying the law of the sea.

2. Artificial Features

Developing abilities and needs to artificially manipulate the *terra firma* will stimulate a process of claims and counterclaims. Artificially manipulated land can be separated into three types: (i) expanding existing land; (ii) reinforcing existing land, insular or continental; and (iii) creating new insular landmasses. While the first two have gained broad support in scholarship, the latter is consistently opposed due to its inconstancy with the current international rules in place. Rather than distinguishing between "natural" and "artificial" changes to the land, it is preferable, as this Article suggests, to treat both changes together, to formulate a new balance as part of a "new package-deal."

i. Land Extension

Basepoints used for drawing baselines have been placed on artificially reclaimed land.[180] Although it is unclear whether such practice would gain support should its scope and application increase,[181] the extension of existing land will have a limited effect on the balance between *mare liberum* and *mare clausum* even if, *arguendo*, it was recognized as a source of rights.[182] Not only could the seaward extension be rather limited in length, but the rationales for extending certain jurisdictions from such artificial baselines will continue to

exclusivity of the coastal state over the interests of other states within the EEZ. It should also be noted that should the recently adopted treaty on biodiversity beyond national jurisdiction be ratified and enter into force, the potential loss in inclusive environmental powers would increase. *See Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction*, U.N. Doc. A/CONF.232/2020/3 (June 19, 2023) [hereinafter *Agreement on the Conservation and Sustainable Use of Marine Biological Diversity*].

180. *See* PROELSS, *supra* note 39, at 864.

181. *See id.*; PURCELL, *supra* note 14, at 264.

182. *See* PROELSS, *supra* note 39, at 864; PURCELL, *supra* note 14, at 264.

exist.

The rationale for protective zones, in other words, the territorial sea and its contiguous zone, applies equally to artificial extensions. Although such a proposition further confines the freedom of navigation by subjecting it to the regime of innocent passage, it does so to protect the security of the coastal state and the people living or working on the reclaimed land. For example, absent such extension, if the state reclaims six nautical miles, the protective zone would be reduced to a scale insufficient to protect against even twentieth-century risks. Given the rationales of the territorial sea, there is much justification to extend the balance within this regime to reclaimed land.

But such reasoning does not apply to economic rights. Setting baselines on reclaimed land would chip away from the inclusive high seas and the Area. Extending EEZs through land reclamation will likely generate counterclaims. If such extensions conflict with another state's EEZ entitlement, that state will significantly oppose any encroachment, generating conflicts. Absent such an opposing state, however, extending sovereign rights and jurisdictions over the water column may be beneficial for the international community by reducing the tragedy of the commons. The same, however, does not apply to shelf rights. Such encroachment on the Area would be a pure loss for the international community and would disrupt the foreseeability of exploitation contracts issued by the ISA.

Thus, while there are justifications for extending territorial seas and water column rights with reclaimed land, continental shelf rights should be retained by the international community for inclusive use. Such separation between water column and seabed rights, however, will likely generate management difficulties.[183] Because the inclusive use of the international Area was structured to co-exist with the regime of the high seas, itself an inclusive use, conflicts may arise should it overlap with another State's exclusive use of the water column. For example, the EEZ regime provides for the State's exclusive jurisdiction over artificial installations, arguably requiring its authorization for any practical exploitation of seabed and subsoil resources. Therefore, any management problems stemming from a separation between the water column and seabed will need to be considered.

ii. Land Reinforcement

Participants will likely reinforce insular features and land territory to prevent submergence.[184] Under the current rules, states are entitled to claim exclusive jurisdiction only from naturally formed features.[185] Under a literal and strict interpretation of Article 121 of UNCLOS, reinforced features would lose their rights, because they would no longer be *naturally* above water at high tide and because their ability to sustain human habitation or economic life would be

183. *See* L.H. Legault & Blair Hankey, *From Sea to Seabed: The Single Maritime Boundary in the Gulf of Maine Case*, 79 AM. J. INT'L L. 961, 985 (1985).

184. *See* PURCELL, *supra* note 14, at 240; Caron, *supra* note 14, at 639.

185. UNCLOS, *supra* note 4, art. 121; PROELSS, *supra* note 39, at 864-65; Tanaka, *supra* note 54, at 76-77.

preserved artificially. Scholars, on the other hand, prefer the interpretation by which such features retain their rights irrespective of their artificial reinforcement.[186] Such a position is reasonable, because an evolutionary interpretation, which considers the evolving context, particularly climate change, supports the claim that such features should be recognized with the same economic jurisdictions they had before the rise of sea levels.

Besides the more obvious rationales of equity, such a conclusion would not undermine the balance between inclusive and exclusive rights. First, the use of artificial means to prevent submergence would not affect the ability to exercise the accompanying environmental and sustainability powers. Second, as long as the feature continues to provide for human habitation and economic life, which is presumably the reason for most reinforcements, the rationales for recognizing the security and economic jurisdictions persist. It is thus reasonable to assume that few, if any, participants are likely to lay claims to deprive such features of jurisdiction because of climate change or exercise any power to enforce such deprivation. Absent significant counterclaims, such practice may serve to interpret the Convention or generate state practice for the purpose of customary law. This realization chips away at the distinction between artificial and natural *terra firma* for jurisdiction.

iii. Land Creation

Artificial manipulation to the *terra firma* involves claims to create eligible land from otherwise ineligible land. Two distinct but rather similar transformations will occur: (i) "rocks" will be transformed into features able to sustain human habitation or economic life; and (ii) low-tide elevations or submerged ridges will be raised above high tide and provided such capabilities.

The first transformation concerns whether a feature's ability to sustain human habitation or economic life must be evaluated based on its natural form or whether the law could account for technological capabilities.[187] The strict approach of the *South China Sea* tribunal has been criticized by scholars, who rightfully prefer that any evaluation be based on the factual realities when the claim is made, rather than by tracking the putative feature's natural conditions.[188] Such approach is attuned to existing realities and responds to the objectives of the jurisdiction rather than a strict adherence to the land.

The second transformation is far more complex as any rights stemming from such features would contradict the current international rules, requiring that the land be naturally above water to generate any maritime rights beyond a 500-meter safety zone. It is, however, questionable whether such insistence on the natural *terra firma* as a source of rights is still appropriate, given the objectives underlying the jurisdiction itself. As explained below, from the perspective of the international legal process, rising sea levels and artificial land reclamations

186. *See* PROELSS, *supra* note 39, at 864; Tanaka, *supra* note 54, at 77; ILC, *Sea-level*, *supra* note 11, ¶ 215.

187. *See* Tanaka, *supra* note 54, at 81; Guillaume, *supra* note 79.

188. Charney, *supra* note 4, at 867; Nordquist et al., *supra* note 79, at 5.

may in fact constitute two sides of the same coin, undermining the effectiveness of the current rules and justifying an overall compromise solution.

While states have not yet laid claims to maritime jurisdiction from completely artificial features, claims have been made to jurisdiction from miniscule features that have been bolstered through technology.[189] Japan, for instance, has invested millions in the preservation of Okinotorishima, a minuscule feature held above water through artificial reinforcement,[190] but its claim for sovereign rights has been opposed by China and other regional states.[191] China, however, has made its own claims based on artificial fortifications of islands in the South China Sea.[192] State practice in this regard is thus inconsistent.

Scholars support claims to disregard the principle that the "Land Dominates the Sea" when considering the effects of sea-level rise, but most scholars insist that the principle be strictly preserved when the "land" was not naturally formed.[193] Imogen Saunders recently suggested that artificial islands should be considered "territory" under international law, but a "territory" ineligible for maritime rights, and further argued that high-seas artificial islands be evaluated as lawful or unlawful appropriation.[194] Michael Gagain went even further, suggesting an ad hoc solution for small island states to recognize maritime rights when artificial features replace submerged territory.[195]

Although claims from previously ineligible features could be rejected entirely or provide for ad hoc exceptions, that is not necessarily the correct path or the one in which international law is likely to evolve as technological capabilities develop. It would seem reasonable to assume that security or economic claims might be raised by states in respect of populations of artificial features. Denying such claims as unlawful mistakenly treats the norms under UNCLOS as *a priori* and enduring. This vantage point disregards the fact that rights, jurisdictions, and obligations recognized as part of the balance between *mare liberum* and *mare clausum* have always been responsive to changing factual realities. As a point of reference, such treatment of the current rules ignores the fact that claims for twelve-nautical-mile territorial seas or 200-nautical-mile economic zones would have been deemed unlawful before UNCLOS. The law of the sea is an ever-evolving field of international governance, attuned to changing circumstances and especially developing technological capabilities.

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189. *See* Lisztwan, *supra* note 14, at 166; Saunders, *supra* note 13, at 646; Nasu, *supra* note 43, at 243, 260.

190. Lisztwan, *supra* note 14, at 166.

191. *See, e.g.*, Jesse Johnson, *Chinese Survey Vessel Spotted in Okinotorishima EEZ for Over a Week*, JAPAN TIMES (July 18, 2020), https://www.japantimes.co.jp/news/2020/07/18/national/china-okinotorishima-eez/; Tinghui Lin, *Okinotori: A New Beginning for Taiwan-Japan Maritime Dialogue*, (June 17, 2016), https://amti.csis.org/okinotori-new-beginning-taiwan-japan-maritime-dialogue/.

192. John Ruwitch, *U.S. Rejects Beijing's Maritime Claims in South China Sea*, NPR (June 13, 2020), https://www.npr.org/2020/07/13/890464319/u-s-rejects-beijings-maritime-claims-in-south-china-sea.

193. *See, e.g.*, Soons, *supra* note 14, at 222; Saunders, *supra* note 13, at 663.

194. Saunders, *supra* note 13, at 663.

195. *See generally* Gagain, *supra* note 72; STOUTENBURG, *supra* note 14, at 175.

Assume that an artificial feature provides a home for a thousand people living off the sea around it. If the feature were a reinforced "rock," the strict approach would limit the feature to a twelve-nautical-mile territorial sea. But should such a feature and its population necessarily be denied an economic and environmental zone? Is it farfetched to assume that the state whose population resides on the feature would lay claims to secure resource rights and exercise powers necessary to protect the marine environment around it? The fact that such a feature would have a territorial sea could alleviate some concerns, but not all given the limited spatial extent of these powers. A more difficult scenario occurs when the artificial island is created over a low-tide elevation or a previously submerged ridge. This feature would be denied even a territorial sea, with the state's security claims confined to a 500-meter band.[196] It is easy to imagine that such jurisdiction will prove highly insufficient as artificial features grow and become populated.

It is thus quite likely that states will lay claims to exercise increasing security jurisdiction around such features, and perhaps even territorial seas. Tracking the legislative history of the law of the sea reveals that the proposition that artificial features be denied maritime jurisdiction, and specifically a territorial sea, was disputed.[197] It would be imprudent to dismiss such claims entirely, as the security rationales of such jurisdiction would apply equally to natural and artificial islands. Although rules must be put in place to mitigate potential abuse, denying such rights entirely will undermine the objective of the jurisdiction, precipitating claims to amend it.

* * *

The law of the sea is an ever-evolving field of global governance, and confining our policy thinking to existing norms is inappropriate. Rather, it is quite reasonable to conclude that, in many aspects, claims from submerged features and claims from artificial features are two sides of the same coin. These changes to geography due to human activity and technological development will generate claims to stretch or amend the principle that the "Land Dominates the Sea" as the natural *terra firma* no longer provides for a stable, predictable, and even appropriate source of rights and jurisdictions. While claims stemming from rising sea levels suggest amending the principle in the literal sense by dispensing with the need for an eligible land, claims from technological innovation target the *natural* component of the land.

As the changing circumstances undermine the effectiveness of the current international rules in place, the process of claims and counterclaims is anticipated to continue and trigger a process of regime evolution. Although those primarily affected by rising sea levels had little hand in bringing about the result, something that cannot be said for for artificial islands intentionally constructed by those claiming rights, it does not inevitably lead to separate treatment. From the perspective of the international legal process, treating both sets of claims as

196. UNCLOS, *supra* note 4, art. 60.

197. *See* Gagain, *supra* note 72, at 103-06, 113; *see also* PROELSS, *supra* note 39, at 863-65.

relating to the principle that the "Land Dominates the Sea" may highlight the way to a compromise. While developing countries are interested in amending the principle to allow for claims from submerging or fortified features, certain developed countries are interested in recognizing jurisdiction for artificial features. As will be further elaborated below, treating both claims together will allow a consensus to balance between these claims, thus providing for a more nuanced source of rights and obligations over the oceans than the outdated reliance upon the natural land.

III. INTERACTIONS BETWEEN PARTICIPANTS IN THE INTERNATIONAL LEGAL PROCESS

From the perspective of policy-oriented jurisprudence, the global order for the oceans must provide for minimum order and should aspire to facilitate the optimum order. To recall, the minimum order refers to policies that prevent conflict among nations securing the stability of the international system, while the optimum order is defined as one that optimizes the aggregated gain in international values for participants.[198] The previous parts of this Article outlined the existing balance between inclusive and exclusive ocean rights and obligations so as to subsequently explain how climate change and technological innovation undermine this balance. As explained, this process will not only render certain international rules under UNCLOS unable to provide for the optimum order but risk destabilizing the preservation of minimum order. This Part will evaluate the effects produced by the changing circumstances on the international values and the interactions among the participants involved in the international legal process, thus identifying the probable outcomes of the process of claims and counterclaims. The subsequent, final, part of the Article will build on this analysis to propose modifications that will shape policy choices towards the preferred outcome that promotes the common interest.

Identifying the projected outcomes and shaping arrangements to promote the preferred outcomes requires approaching problems "through the prism of policy and the contexts in which the values of that policy are produced and distributed."[199] The process of international lawmaking and applying is shaped by base values, which are used to secure other values, and scope values, which are the values sought to be optimized. The ability of a participant to exert leverage in interactions is affected by its capacity to employ values, while any proposed governance regime should optimize the gain in values for all participants: "[a] public order of human dignity is defined as one which approximates the optimum access by all human beings to all things they cherish."[200] Sketching a compromise solution, a "new package-deal," to balance inclusive and exclusive rights, thus requires understanding how the interactions between the participants will unfold in light of the changing circumstances and

198. MYRES MCDOUGAL, HAROLD LASSWELL & JAMES MILLER, THE INTERPRETATION OF AGREEMENTS AND WORLD PUBLIC ORDER 3 (1967).

199. REISMAN, WORLD ORDER, *supra* note 18, at 127, 130-31.

200. Reisman et al., *supra* note 6, at 576.

their relation to the optimization of international values.

To understand the process of claims and counterclaims that will unfold due to climate change and technological innovation, and thus the probable and preferred outcomes, this Part will proceed in two sections. Section A will consider the international values and basic policies which participants will employ, and that the regime must optimize, in relation to the changing circumstances. Section B will then outline the participants involved and how the changing circumstances will affect their interests and shape their interactions.

A. The International Values Shaping Interactions

The optimum global order for the oceans must develop to provide arrangements to secure value production and distribution. Although international values, like any norms,[201] may change as circumstances and capabilities develop, it is suggested that where it comes to ocean governance the current international values consist of (1) wealth; (2) skill or innovation; (3) equity; (4) security; (5) health and safety; (6) human dignity; and (7) environmental protection.[202]

1. Wealth

Exclusive and inclusive uses distribute access to valuable resources, which translates into gains in wealth for participants, including shipping, fishing, metals, fossil fuels, and renewable energy sources. In fact, the evolution of the regime governing ocean resources indicates that access to resources was a key catalyst shaping the regime—in a manner preferring exclusive over inclusive distribution.[203]

Exclusive resource rights are tied to sovereignty over land; thus, geographical changes risk reducing or negating certain benefits,[204] while increasing inclusive gains in wealth for others.[205] The melting of Arctic ice allows for shorter and more efficient transportation routes,[206] which unlocks otherwise inaccessible resources.[207] This propels claims by others, including China, to retain inclusive rights over some of these resources.[208] Significant

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201. *See supra* note 24; *see also* Harold Demsetz, *Towards a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967) (on the evolution of property rights)

202. *See supra* note 6. Although *respect* (or esteem) as a value may affect the decisions of certain actors, where it comes to the law of the sea, its ability to shape policy choices in the twenty-first century is rather diminished.

203. *See supra* Section I.B; Posner & Sykes, *supra* note 7, at 595; Brilmayer & Klein, *supra* note 41, at 709-13.

204. *See* Caron, *supra* note 14, at 634; Soons, *supra* note 14, at 216. *But see* PURCELL, *supra* note 14, at 284.

205. *See* Lisztwan, *supra* note 14, at 165.

206. *See, e.g.*, Chircop, *supra* note 10, at 3; Nicolas LePan, *The Final Frontier: How Arctic Ice Melting is Opening up Trade Opportunities*, WORLD ECON. FORUM (Feb. 13, 2020), https://www.weforum.org/agenda/2020/02/ice-melting-arctic-transport-route-industry/.

207. *See, e.g.*, *The Arctic—America's Last Energy Frontier*, AM. SEC. PROJECT, https://www.americansecurityproject.org/energy-security/the-arctic-americas-last-energy-frontier/; Daria Shapovalova, *Arctic Petroleum and the 2°C Goal*, 10 CLIMATE L. 282 (2020).

208. CHINA'S ARCTIC POLICY, available at http://www.xinhuanet.com/english/2018-

worldwide costs are anticipated due to the melting of the Arctic, and these costs need to be balanced with any prospective gains.[209]

Artificial land reclamations affect the access to wealth of participants, with both positive and negative effects. Fortification reduces losses from rising sea levels; however, some developing participants may lack the wealth necessary to reinforce features or construct artificial islands.[210] As David Caron pointed out, reinforcement to avoid losing maritime entitlement may become wasteful and requires reconsideration on the international and domestic levels.[211] Artificial islands, however, irrespective of the population and its economic needs, are precluded from generating exclusive rights.

Finally, UMVs produce conflicting effects on wealth. As explained above, UMVs reduce crew costs and increase the relative space available for cargo,[212] but they will also facilitate the ability of actors to unlawfully access the wealth of others through IUU fishing, while evading the state's police powers. In addition, the increased vulnerability of such shipping to cyber-attacks, and the absence of a crew for repairs,[213] risks undermining coastal states' access to wealth through accidents and environmental damage.

2. Skill or Innovation

Innovation changes the circumstances in which interactions occur and generates new claims to alleviate risks and costs. In the past, innovation triggered the regime's evolution to confine *mare liberum* by introducing elements of *mare clausum*, and such a process will continue with further innovation. Innovation augments relative gains in wealth, and because wealth is critical for innovation, the developed participants possess an edge over developing. Innovation is critical for fortifying coastlines and islands from rising sea levels,[214] and even preventing or reversing it through climate change mitigation.[215] Yet the participants most exposed to losses in wealth are those least able to employ innovation or sustain costs.[216] This indicates that for the regime to gain consensus, the ability to

01/26/c_136926498_4.htm (last visited July 10, 2023); Marc Lanteigne & Mingming Shi, *China Stakes Its Claim to the Arctic*, THE DIPLOMAT, https://thediplomat.com/2018/01/china-stakes-its-claim-to-the-arctic/; *U.S. Rejects Interference by Non-Arctic Countries in Polar Region: Official*, REUTERS (May 2, 2019), https://www.reuters.com/article/us-usa-pompeo-arctic/u-s-rejects-interference-by-non-arctic-countries-in-polar-region-official-idUSKCN1S8299; Sandi Lansetti, *The "Keep in the Ground Future" of Arctic Fossil Fuel Resources*, 25 ARCTIC & N. 5 (2016).

209. Jismina Alvarez et al., *A Framework for Assessing the Economic Impacts of Arctic Change*, 49 AMBIO 407 (2020).

210. Powers, *supra* note 161, at 171.

211. Caron, *supra* note 14, at 641.

212. Pritchett, *supra* note 15, at 201.

213. DMA REPORT, *supra* note 87, at 29; Baughen, *supra* note 99, at 130; Coito, *supra* note 12, at 305-06.

214. *See, e.g.*, Xianli Zhu et al., *Technologies for Climate Change Adaptation — Coastal Erosion and Flooding* (2010), available at https://backend.orbit.dtu.dk/ws/portalfiles/portal/5699563/Technologies+for+Climate+Change+Adaptation-Coastal+Erosion+and+Flooding.pdf.

215. UNFCCC, *What is Technology Development and Transfer*?, available at https://unfccc.int/topics/climate-technology/the-big-picture/what-is-technology-development-and-transfer.

216. *See* Powers, *supra* note 161, at 167-71.

innovate must be augmented for all participants and balanced to avoid adversely affecting others. The law of the sea must not, however, constrain innovation through rules frozen in time.

3. Equity

Under international law, the concept of "equity" is intended, *inter alia*, to infuse "considerations of fairness and justice into the fabric of the law."[217] For ocean governance, equity governs the distribution of exclusive and inclusive rights,[218] yet claims stemming from climate change and technological innovation will disrupt the regime's equilibrium.

Rising sea levels have generated equity claims from small island states to preserve their rights over ocean resources in the face of submergence.[219] Should baselines and maritime jurisdictions remain ambulatory, the participants most responsible for the climate crisis would reap benefits at the expense of those primarily affected.[220] Such equitable claims are unlikely to generate significant opposition due to public support for the plight of small island states; this suggests that the principle of "Land Dominates the Sea" will evolve in response.

The increased development of artificial *terra firma* will similarly generate claims of equity. As with submerged features, these include retaining jurisdiction from features reinforced through artificial means.[221] But given that maritime jurisdiction is intended to support the security and wealth of the population, claims of equity may be raised when an artificial island provides human habitation or economic life, affecting the application of "Land Dominates the Sea."

International rules should not remain frozen if the outcomes no longer provide for an equitable or fair result in the changed circumstances. The inappropriateness of natural land as source of title, with conflicting and correlating interests for participants, may provide the opportunity for a compromise with respect to the different equity claims.

4. Security

The retreat of *mare liberum* from the late nineteenth century until today is attributable in large part to security concerns. It is therefore reasonable to assume that the security concerns generated by technological innovation and climate change will further shape the regime's evolution.

As evident from the current situation in the South China Sea, the construction of artificial islands expands the power exercised by certain

217. Francesco Francioni, *Equity in International Law*, ¶ 29, MAX PLANCK ENCYCLOPEDIA OF PUB. INT'L L. (last visited July 10, 2023).

218. *See supra* Part I. On equity in maritime delimitation, see THOMAS COTTIER, EQUITABLE PRINCIPLES OF MARITIME BOUNDARY DELIMITATION ch. 8 (2015).

219. *See* ILC, *Sea-level*, *supra* note 11, ¶¶ 84-87, 215-18; Chris Armstrong & Jack Corbett, *Climate Change, Sea Level Rise, and Maritime Baselines: Responding to the Plight of Low-Lying Atoll States*, 21 GLOB. ENV'T POL. 89 (2021).

220. Powers, *supra* note 161, at 166-68.

221. *See* ILC, *Sea-level*, *supra* note 11, ¶¶ 211-18.

participants, while aggravating security concerns for others.[222] Should people begin to reside on artificial islands, states would claim to exercise security jurisdiction to protect them. On the opposite side, naval powers will probably object to territorial sea claims from submerged features to avoid unnecessarily confining the freedom of navigation.

Cyber-threats undermine the security of ocean-based activities.[223] These concerns include increased exposure of ships to cyber-attacks as well as susceptibility to espionage and cyber-warfare conducted from ships.[224] Certain states have claimed to confine the right of passage through their territorial sea, and even EEZ, due to these security concerns.[225] While such claims are inconsistent with the current international rules, they will affect the regime's evolution.

The introduction of UMVs increases security risks and may further increase jurisdictional claims. UMVs could reduce risks from pirates and augment the abilities of coast guards.[226] However, with no crew on board, UMVs are increasingly susceptible to cyber-attacks and their consequences.[227] It is unclear whether the coastal state or the flag-state (especially a flag-of-convenience state[228]), could exercise jurisdiction over perpetrators, assuming those could be identified.[229] The reduced ability of coastal states to exert power to deter violations of their laws and regulations disrupts the rationale of the balance between the coastal state and the flag-state within maritime zones. In response, coastal states will likely claim to limit or otherwise regulate the operation of such vessels therein to safeguard their coasts, operations, environment, or traffic.

5. Health and Safety

The regime governing the oceans is attuned to the interests of participants to safeguard health and safety. Such norms include obligations to protect the marine environment, provide assistance to persons in distress, and confront pirates and slavers. Yet technological innovation and climate change risk undermining the gains of participants and precipitating claims.

Climate change harms health and safety as the destruction of coral reefs and biodiversity undermines access to essential nutrients, while rising sea levels

222. *See, e.g.*, U.S. Navy, *USS John S. McCain Conducts Freedom of Navigation Operation in South China Sea* (Dec. 21, 2020), https://www.cpf.navy.mil/news.aspx/130787.

223. DMA REPORT, *supra* note 87, at 36.

224. Lubin, *supra* note 31, at 18-25; Soyer, *supra* note 104, at 111.

225. Lubin, *supra* note 31, at 28-44; Ringbom, *supra* note 15, at 144.

226. *See* Coito, *supra* note 12.

227. *See id.* at 305; DMA REPORT, *supra* note 87, at 36, 94-96.

228. Under the law of the sea, the flag-state exercises certain exclusive jurisdictions over ships flying its flag. Although UNCLOS requires a genuine link between the state and the ship, in many instances, ships fly what has been termed a "flag convenience." This refers to situations in which states offer their flag in return for a fee without the ability or interest to enforce regulations over the ships. This is precisely the attractiveness of a flag of convenience for ship owners, but translates to negative externalities to the detriment of the other members of the international community.

229. Chircop, *supra* note 10, at 17; Henrik Ringbom, *supra* note 15, at 161; DMA REPORT, *supra* note 87, at 28.

displace populations.[230] The COVID-19 pandemic will likely accelerate the introduction of UMVs because UMVs allow the transportation of goods while not requiring the transportation of people,[231] requiring that any claims to limit UMVs be balanced with the health benefits they provide. Finally, the introduction of land reclamations may be helpful in creating additional living space, but it may harm the marine environment, as is evident from China's island building.[232] Health thus provides conflicting interests for many participants.

6. Human Dignity

An essential element of a global order of human dignity is the inclusive participation of all stakeholders in the decision-making process.[233] UNCLOS provided for such participation both in its foundation through a parliamentary diplomatic arena and the institutions it established. To promote human dignity, any modification should be done through consensus rather than be dictated by certain participants. For instance, the ILC has begun a process of considering the legal effects of rising sea levels.[234]

For affected states and peoples, claims to retain jurisdiction from submerged features are deeply rooted in claims of equity and human dignity.[235] Yet it is important to realize that when populations settle on artificial features, they may also lay claims for participation and for engulfing themselves in the rights and protections accorded to populations on natural features. Appreciating that the law of the sea grants rights tied not only to land, but also to people,[236] will generate claims to reconsider the clear-cut distinction between artificial and natural *terra firma*.

7. Environmental Protection

Environmental protection constitutes an important aspect of international law in general and UNCLOS specifically. Ocean governance must provide rules that encourage the reduction of environmental externalities "to the greatest extent *technologically feasible*" towards their elimination.[237] Given the limited effects of inclusive environmental protection, shifting the regime towards increased exclusive rights and jurisdictions is justified to facilitate the

230. IPCC, *Oceans Report*, *supra* note 9, exec. summary.

231. *See* Paul Sawers, *The Role of Autonomous Ships in a World Wary of Pandemics*, VENTUREBEAT (Aug. 17, 2020), https://venturebeat.com/2020/08/17/the-role-of-autonomous-ships-in-a-world-wary-of-pandemics/; Holman Fenwick Willan LLP, *Autonomous Ships: A Pandemic Vaccine?* (Sept. 28, 2020).

232. Leland Smith et al., *Evidence of Environmental Changes Caused by Chinese Island-Building*, 9 SCI. REPS. (2019).

233. Myres McDougal, Harold Lasswell & Michael Reisman, *The World Constitutive Process of Authoritative Decision*, 19 J. LEGAL EDUC. 256 (1967); *see also* Eyal Benvenisti, *Sovereigns as Trustees of Humanity: On the Accountability of States to Foreign Stakeholders*, 107 AM. J. INT'L L. 295 (2013).

234. ILC, *Sea-level*, *supra* note 11.

235. Powers, *supra* note 161, at 166-71.

236. For instance, UNCLOS recognizes traditional fishing rights. *See* UNCLOS, *supra* note 4, art. 51; POLITE DYSPRIANI, TRADITIONAL FISHING RIGHTS: ANALYSIS OF STATE PRACTICE (2011).

237. E. Donald Elliot & Daniel C. Esty, *The End of Environmental Externalities Manifesto: A Rights-Based Foundation for Environmental Law*, 29 N.Y.U. ENV'T L.J. 505 (2021).

employment of domestic powers to reduce environmental externalities.[238]

The significant emissions produced by shipping indicate that implementing rules to support the deployment of UMVs is essential for facilitating climate change mitigation and adaptation efforts.[239] Rules must ensure, however, that environmental impact is not increased from otherwise avoidable accidents or malfunctions.[240] The reduced effectiveness of the coastal state's already limited environmental powers indicates that the introduction of UMVs requires increased jurisdiction to protect and preserve the marine environment at the expense of flag-states. In addition, ocean-based geoengineering efforts, will increase risks for coastal states concerned with the protection and preservation of their marine environment.[241] The potential of private activities may encourage participants to exercise increased jurisdiction over the high seas to mitigate any adverse effects.

Ocean governance must evolve to generate incentives for all participants to implement measures to protect the environment. Exclusive jurisdiction provides incentives to protect the marine environment, but this must be balanced with the rights of other affected stakeholders. Increased access to Arctic and OCS resources, for instance, may undermine environmental efforts because it may prolong the shift to cost-effective renewable energy by increasing the investment required to further reduce its costs.[242] Future work will need to consider whether the law of the sea should evolve to include obligations to avoid exploiting exclusive or inclusive rights in ways that produce environmental externalities.[243] Ocean claims should be balanced with obligations to reduce overexploitation of living resources, ocean pollution, and even the extraction of resources that exacerbate the climate crisis. Exclusivity may no longer justify generating negative externalities.

B. The Participants and their Interactions Shaping Ocean Governance

The global order of the oceans is primarily shaped by the interactions of states, even though private parties and international organizations will contribute

238. *See also id.*

239. *See* HARRISON, SAVING, *supra* note 9, at 114; Erik J. Molenaar, *The Arctic, The Arctic Council, and the Law of the Sea*, *in* GOVERNANCE OF ARCTIC SHIPPING: BALANCING RIGHTS AND INTERESTS OF ARCTIC STATES AND USER STATES 24, 37 (Robert Beckman et al. eds., 2017); *see, e.g.*, MUNIN Project, *supra* note 101; DMA REPORT, *supra* note 87, at 1, 29.

240. DMA REPORT, *supra* note 87, at 29.

241. *See, e.g.*, Jeffrey McGee et al., *Geoengineering the Oceans: An Emerging Frontier in International Climate Change Governance*, 10 AUS. J. MARITIME & OCEAN AFFS. 67 (2017); Gi Hoon Hong & Young Joo Lee, *International Governance on Marine Geo-Engineering for Climate Change Mitigation*, *in* GLOBAL COMMONS AND THE LAW OF THE SEA 259 (Keyuan Zou ed., 2018). In 2013, the London Protocol was amended to affect geoengineering through provisions on dumping. *See* Harald Ginzky & Robyn Frost, *Marine Geo-Engineering: Legally Binding Regulation under the London Protocol*, 8 CARBON & CLIMATE L. REV. 82 (2014).

242. *See* Shapovalova, *supra* note 207. As of July 10, 2023, ninety-three states have made OCS claims. *See* United Nations, *CLCS Submissions*, https://www.un.org/Depts/los/clcs_new/commission_submissions.htm (last visited July 10, 2023).

243. *See* Elliott & Esty, *supra* note 237 (proposing that environmental law should shed its economic balance in favor of one which requires the internalization of all externalities).

to the regime's evolution.[244] During the third United Nations Conference on the Law of the Sea, participants were separated into several interest groups that exercised different levers of powers.[245] To properly understand modern interactions that will shape the regime's evolution, participants will be discussed in six contemporary groups: (1) developed coastal states; (2) developing coastal states; (3) small island states; (4) land-locked and geographically disadvantaged states; (5) international organizations, both public and private; and (6) investors.

1. Developed Coastal States

Where it comes to the balance between inclusive and exclusive use, developed coastal states possess some correlating interests, yet sharp divisions and conflicts exist. Their anticipated interactions will play a key role in the regime's development.

Coastal states will aspire to retain their seaward jurisdiction in the face of rising sea levels. For developed states, such claims will likely follow artificial reinforcement because they possess the wealth and skills needed to prevent erosion and submergence. They may thus oppose jurisdiction from submerged features given the benefits provided by inclusive use of spatial areas that reverted to high seas or the Area.[246] Such claims, however, will generate significant opposition, based on equity and human dignity, from developing coastal states and particularly small island states. Given the political and public support for small island states,[247] it is highly unlikely that developed countries would conduct freedom of navigation exercises or exploit resources in zones off submerged features. Inclusivity claims, however, constitute leverage for the recognition of claims from artificial islands.

However, the risks posed by UMVs to developed states are somewhat offset by their ability to employ innovation, wealth, and power to augment enforcement. European countries have been experimenting with UMVs and promote their adoption.[248] Yet their introduction will produce security concerns. UMVs may be employed to conduct intelligence-gathering missions without jeopardizing military personnel, which has led China to claim to exclude such activities from the freedom of navigation.[249] UMVs may also be employed by private parties for illicit activities, while the reduced enforcement capability is exacerbated by the flag-of-convenience problem.[250]

With respect to the Arctic, some conflicting claims on the regulation of

244. On the various participants involved in the international legal process, see REISMAN, WORLD ORDER, *supra* note 18, at 140-41.

245. VIRGINIA COMMENTARY, *supra* note 5, at 29-86.

246. *See* STOUTENBURG, *supra* note 14, at 192.

247. *See, e.g.*, United Nations, *World Leaders Endorse Political Declaration to Help Small Island Developing States Cope with Climate Change*, U.N. Doc. GA/12197 (Sept. 27, 2019).

248. Pritchett, *supra* note 15, at 197-98; DMA REPORT, *supra* note 87; EUR. COMM'N, *Maritime Autonomous Ships and Shipping*, https://ec.europa.eu/transport/modes/maritime/mass_en (last visited July 10, 2023).

249. *See* Klein, *supra* note 90, at 246.

250. On jurisdictional problems, see DMA REPORT, *supra* note 87, at 28; Ringbom, *supra* note 15, at 161; Chircop, *supra* note 10, at 17; Veal, *supra* note 15, at 27; Coito, *supra* note 12, at 291.

transit and the exploitation of resources have already been made by both Arctic and non-Arctic states. Arctic states, such as Russia, Canada, and the United States, have different incentives than China and other non-Arctic states; this has already generated disputes.[251] Furthermore, a conflict of interests exists between the United States and other developed coastal states with respect to the extension of exclusive rights over the OCS, primarily in the Arctic.[252]

With respect to artificial islands, China has been rapidly developing its capabilities, while the United States has vigorously opposed China's activities and claims.[253] The maritime disputes between the two superpowers also exposed disagreements with respect to the extent of innocent passage and inclusive rights in the EEZ.[254] As technological capabilities to construct artificial islands improve, it is unclear whether the United States' opposition will continue—especially outside the South China Sea.

For developed coastal states, claims will likely concern wealth, security, and environmental concerns. They will aspire to augment their gains in wealth by preserving or even increasing the spatial extent of their exclusive rights over ocean resources and protect their gains in wealth from environmental risks by increasing the scope of their exclusive jurisdictions. But conflicting security interests have already been observed and will likely continue to generate claims to augment security jurisdiction in EEZs.

It is also important to consider that for some countries, such as the United States, international policies will be shaped through internal interactions among entities with conflicting interests.[255] As part of this transnational legal process, financial organs such as the Treasury may promote different policy choices than military organs such as the Navy. Such organs may even have conflicting interests, such as a need to balance between military activities in foreign EEZs and the protection of domestic coasts and economic zones. In addition to these entities, sub-national units, including local governments, may affect ocean governance, specifically the protection and preservation of the marine environment.[256]

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251. Molenaar, *supra* note 239, at 62; Benjamin Hofmann, *Policy Responses to New Climate Threats*, *in* CLIMATE CHANGE AND OCEAN GOVERNANCE 215, 218 (Paul G. Harris ed., 2019); Brian Finneran, *U.S. Policy in the Arctic: The Implications of the South China Sea Arbitration Award on American Policy and UNCLOS*, 6 PENN. ST. J.L. & INT'L AFFS. 290 (2018).

252. *See* Golitsyn, *supra* note 66, at 405; *see also Other Nations Are Pursuing Arctic Claims to the Detriment of the U.S.*, UNCLOSDEBATE, https://www.unclosdebate.org/argument/643/other-nations-are-pursuing-arctic-claims-detriment-us (last visited July 10, 2023).

253. Press Release, Permanent Court of Arbitration, South China Sea Arbitration (Republic of the Philippines v. People's Republic of China), (July 12, 2016), at 4-11 (available at https://pca-cpa.org/wp-content/uploads/sites/175/2016/07/PH-CN-20160712-Press-Release-No-11-English.pdf).

254. *See id.*; Lubin, *supra* note 31, at 28-44; Saunders, *supra* note 13, at 674-75.

255. *See, e.g.*, Koh, *supra* note 24; Gráinne De Burca, Robert Keohane & Charles Sabel, *New Modes of Pluralist Global Governance*, 45 N.Y.U. J. INT'L L. & POL. 723, 731 (2013).

256. On the importance of local government for confronting climate change, see Daniel C. Esty & Dena P. Adler, *Changing International Law for a Changing Climate*, 112 AJIL UNBOUND 279, 284 (2018).

2. Developing Coastal States

The limited technological capabilities and increased exposure to climate change will distinguish the interests of developing coastal states. The legislative history of UNCLOS illustrates that when acting together, developing countries can attain concessions from developed countries.[257]

Developing states have conflicting interests when it comes to UMVs. Given their increased exposure to climate change, the benefits for emission reduction may generate support for UMV introduction and use. But given their limited interests in operating within other states' maritime areas, they will prioritize safeguarding themselves from the risks of UMVs rather than preserving the freedom of navigation. For developing states, UMVs present significant risks to wealth, health, and environmental protection because of their already diminished enforcement capabilities, which are further narrowed by limiting deterrence. It is, however, unclear whether they will be able to enforce claims to regulate UMVs and particularly against developed countries that pioneer such vessels.

Because developing coastal states are increasingly exposed to the effects of rising sea levels and possess limited skills to adapt, they will claim to retain jurisdiction from retreating baselines and submerging features. But given their limited skills, they will likely object to any increased exclusive rights from artificial islands, preferring to retain inclusive rights. The interests of most developing coastal states thus include preserving the status quo with respect to the existing spatial allocation of jurisdiction, while increasing exclusive use and regulatory powers within the allocated areas.

3. Small Island States

Climate change negotiations have demonstrated that small island states working in coalition are able to push their agenda.[258] Such abilities stem not only from their numbers, but from their ability to generate sympathy through claims of equity. Considering that sea-level rise is directly connected to climate change, it is likely that these participants will continue to act as a group to facilitate their interests through diplomacy and practice.[259]

Small island states will claim to retain maritime jurisdiction from artificially reinforced islands and those which have turned into "rocks" or

257. On the legislative history of the UNCLOS, see VIRGINIA COMMENTARY, *supra* note 5, at 29-113. *See also* Alan Beesley, *The Negotiating Strategy of UNCLOS III,* 46 L. & CONT. PROB. 183 (1983).

258. AOSIS, *About Us*, https://www.aosis.org/about/ (last visited July 10, 2023); Timothée Ourbak & Alexandre K. Magnan, *The Paris Agreement and Climate Change Negotiations: Small Islands, Big Players*, 18 REG. ENV'T CHANGE 2201 (2018); Cecelia Bolon, *1.5 to Stay Alive: The Influence of AOSIS in International Climate Negotiations* (Nov. 18, 2018), https://www.e-ir.info/2018/11/17/1-5-to-stay-alive-the-influence-of-aosis-in-international-climate-negotiations/; UNFCCC, CLIMATE CHANGE, SMALL ISLAND DEVELOPING STATE (2005).

259. *See* Cogliati-Bantz, *supra* note 136, at 88-89; *see also* AOSIS, CAPACITY CHALLENGES AND OPTIONS RELATING TO MARINE GENETIC RESOURCES OF AREAS BEYOND NATIONAL JURISDICTION, available at https://www.aosis.org/wp-content/uploads/2020/11/Summary-for-policymakers-_final-formatted-v1.pdf.

submerged.[260] Were any such state at risk of completely losing its territory, it would either attempt to artificially reinforce existing islands or create new features, relocate or, if all of these efforts are unsuccessful, lay claims to retain its statehood sans territory as a last resort.[261] Because features could revert to their previous status through successful climate change mitigation or artificial adaptation, small island states will claim to prolong the period of time for reconsidering a feature's legal status. The gradual change in *terra firma* allows the international community to address claims progressively or otherwise indicate prospects for future claims; responses to claims from submerging features would shape any responses to claims of statehood. It may, in fact, be easier to generate consensus for incremental changes to the "Land Dominates the Sea" than disposing of the principle entirely.

Unlike for other developing countries, modifying the rules governing artificial islands will produce significant gains in wealth, health, and security for small island states.[262] Island building has already been employed by those states,[263] even though its scope will likely remain smaller than that of developed states. As these states currently possess maritime entitlements, their interests with respect to jurisdiction may, however, be limited to artificial islands within already established maritime zones, rather than on the high seas. In any event, for small island states, insisting upon a strict application of "Land Dominates the Sea" is counterproductive.

4. Land-Locked and Geographically Disadvantaged States

Land-locked and geographically disadvantaged states cooperated during the third United Nations Conference on the Law of the Sea in an effort to limit the spatial extent of exclusive coastal state jurisdiction. These participants will likely continue to object to prioritizing exclusive jurisdiction over inclusive use. However, it should be recalled that their gains in UNCLOS with respect to ocean resources were quite limited.[264] It is therefore reasonable to assume that with respect to the distribution of exclusive and inclusive rights within the EEZ, the balance of power will remain as it was during the Conference, with limited effects of these states on the outcomes of interactions.

But, with respect to high-seas artificial islands, these participants possess both leverage and incentives. As owners and operators of ships, they are likely to possess the capabilities to construct artificial islands—a protected high-seas freedom. For these participants, the prospect of exclusive jurisdiction from artificial islands is especially appealing, as it will provide them benefits otherwise geographically denied to them. Whether or not they will claim

260. *See* Caron, *supra* note 14, at 650; Gagain, *supra* note 72, at 81, 96; ILC, *Sea-level*, *supra* note 11, ¶ 218; STOUTENBURG, *supra* note 14, at 155; Ian McGregor & Hilary Yerbury, *Politics of Rising Tides*, *in* CLIMATE CHANGE AND OCEAN GOVERNANCE 118, 118-20 (Paul Harris ed., 2019).

261. *See* STOUTENBURG, *supra* note 14, at 376-85; Caron, *supra* note 14, at 650.

262. *See* Gagain, *supra* note 72, at 118-19.

263. Saunders, *supra* note 13, at 645.

264. *See* Hasin, *Resources*, *supra* note 2, at 145-46.

sovereignty over such features,[265] and whether it will be accepted by others, remains to be seen. Therefore, similarly to certain developed coastal states and small island states, these participants possess an incentive to recognize increased maritime jurisdiction from artificial islands, and primarily over the high seas.

5. International Organizations: Public and Private

Modern ocean governance is complex and includes public and private international organizations for its application and enforcement.[266] These include: (i) the United Nations; (ii) institutions established under UNCLOS; and (iii) non-governmental organizations (NGOs).

i. United Nations System

As explained above, participants possess incentives for certain amendments to the existing rules considering the changing circumstances, thus increasing the prospects of convening a fourth United Nations Conference on the Law of the Sea. The United Nations system could promote a process of formal modification either directly or through an implementation agreement, between all or most parties. The realization that states may continue to lay claims to amend the rules through practice, could generate incentives to reach a "new package-deal" to accommodate the changing circumstances.

The General Assembly is dominated by developing countries, which may try to promote understandings and interpretations through a majority vote. But, absent support by the major powers, the Assembly's ability to affect the policy choices of reluctant participants is limited.[267] The Assembly would, however, likely continue to provide a platform for submerged states to lay claims.[268]

The prospect of sovereignty or jurisdictional claims from artificial islands absent international recognition, and especially over the high seas, risks generating conflicts and undermining minimum order. Yet because the states most likely to make claims from artificial islands are also the major powers, the prospect of Security Council action is unthinkable. However, the Council has previously acted to confront indirect threats to peace. The Council could thus call upon or even require states to recognize maritime jurisdiction emanating from features that lost *de facto* status or otherwise mandate island fortification to protect populations. However, such proposition is unlikely to materialize. Given that China is actively promoting artificial islands, it possesses an incentive

265. *See* Saunders, *supra* note 13, at 680-82; Gagain, *supra* note 72, at 102.

266. *See, e.g.*, McGregor & Yerbury, *supra* note 260, at 118-20; HARRISON, SAVING, *supra* note 9, at 118; United Nations, Division of Ocean Affairs and the Law of the Sea, *Non-Governmental Organizations (NGOs) Links*, http://www.un.org/depts/los/Links/NGO-links.htm (last visited July 10, 2023).

267. *See* Michael Reisman, *The Constitutional Crisis in the United Nations*, 87 AM. J. INT'L L. 83, 84 n.2 (1993).

268. The General Assembly has been quite lenient with its criteria for providing observer state status. *See* INST. DE DROIT INT'L, ARE THERE LIMITS TO THE DYNAMIC INTERPRETATION OF THE CONSTITUTION AND STATUTES OF INTERNATIONAL ORGANIZATIONS BY THE INTERNAL ORGANS OF SUCH ORGANIZATIONS (WITH PARTICULAR REFERENCE TO THE UN SYSTEM)? 189-93 (2021).

to condition any deviation from "Land Dominates the Sea" on accommodating its anticipated security and wealth claims from artificial features. Such a position will be shared by other major powers should they increase their investment in artificial islands.

The United Nations system includes many public international organizations that may touch on maritime jurisdiction. The Food and Agriculture Organization, for example, may continue activities to protect inclusive access to food sources while promoting the ability of states to protect vital food supplies under their jurisdiction.[269] Institutions established for combating climate change may promote the use of UMVs to reduce emissions or facilitate island states with fortifying their coastlines.[270] Yet they may also promote inclusive rights to allow for geoengineering efforts.

ii. UNCLOS Institutions

UNCLOS established institutions to promote and protect the distribution of access to ocean resources, which may be used to clarify or even amend the rules through interpretation.

The International Tribunal for the Law of the Sea (ITLOS) may exercise compulsory jurisdiction over member states for all matters that were not lawfully excluded.[271] ITLOS is accompanied by additional mechanisms for dispute settlement.[272] Although the matter of "sovereignty" would be excluded from the jurisdiction of an UNCLOS tribunal *de jure*, the *South China Sea* tribunal demonstrated that it could rule on matters affecting sovereignty through UNCLOS provisions.[273] As the changing circumstances materialize, further disputes may be brought to interstate arbitration, such as the termination of a delimitation treaty or the exclusion of a UMV.

Although UNCLOS provides for mandatory dispute settlement, it has shown limited effect on the policy choices of major participants. The United States is not a member and thus not subject to mandatory dispute settlement. More crucially, while China is a member, the *South China Sea* dispute has illustrated that even an adverse decision did not alter China's decision-making process with respect to artificial islands and maritime claims.[274] Russia is also

269. Food & Agriculture Org. of the United Nations, *Illegal, Unreported and Unregulated (IUU) Fishing*, http://www.fao.org/iuu-fishing/en/ (last visited July 10, 2023); Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission, Advisory Opinion, 2015 ITLOS Rep. 4, ¶ 92.

270. United Nations, Climate Change, *Partners and Relevant Organizations*, https://unfccc.int/topics/science/resources/partners-and-relevant-organizations-0 (last visited July 10, 2023).

271. UNCLOS, *supra* note 4, arts. 297-98.

272. *Id.*, arts. 284, 287.

273. On the decision, see Bernard Oxman, *The South China Sea Arbitration Award*, 24 U. MIAMI INT'L & COMP. L. REV. 235 (2017).

274. *See, e.g.*, Associated Press, *Beijing Tells Duterte it Won't Honor South China Sea Ruling*, NAVYTIMES (Aug. 31, 2019), https://www.navytimes.com/news/your-navy/2019/09/01/beijing-tells-duterte-it-wont-honor-south-china-sea-ruling/; Raul (Pete) Pedrozo, *Maritime Police Law of the People's Republic of China*, 97 INT'L L. STUD. 465 (2021).

subject to maritime disputes with Ukraine, which are ongoing.[275] The ability of this mechanism to affect Russia's policies is quite limited as is evident from the *Arctic Sunrise* litigation[276] or the many investment disputes launched against it following the annexation of Crimea.[277] While the dispute settlement mechanism may facilitate the clarification of existing laws or even serve as a forum to amend rules through an evolving interpretation, its ability to counteract the interests of the major powers will be limited.

UNCLOS provides for two additional important institutions: the CLCS and the ISA. As explained above, both institutions relate to the balance between inclusive and exclusive rights over seabed and subsoil resources beyond 200 nautical miles from baselines. When a state establishes the edge of the margin based on CLCS recommendations, it will be final and binding.[278] This may suggest that states concerned with rising sea levels should make submissions to the CLCS, and some have even proposed that submissions should be allowed for margins below 200 nautical miles.[279] This could, arguably, prevent the loss of shelf rights should an island be submerged or become a "rock."[280] However, as any loss of rights would increase the common heritage of mankind, proposing that the CLCS process be used to confront the effects of rising sea levels would flip the *raison d'être* of the institution. Such interpretation disregards the context.

The CLCS scientifically verifies and validates claims by states to exclusive rights over resources that would be otherwise inclusively used[281] to protect the Area from excessive OCS claims.[282] The "final and binding" element signals that the balance with respect to exclusive exploitation of otherwise common shelf resources gives preference to scientific certainty.[283] It would not be a good-faith interpretation to allow a state to continue claiming continental shelf rights at the expense of the international community because a decision intended to protect the rights of the community validated such claim in completely different settings. A decision by the CLCS indicating the edge of the margin should not be allowed to circumvent Article 121 and the changing geographic realities, and neither should states be able to use such a decision as a "shield" when the margin is below 200 nautical miles. Such claims and submissions would utterly abuse the

275. *See, e.g.*, Dispute Concerning Coastal State Rights in the Black Sea (Ukr. v. Russ.), PCA Case No. 2017-06.

276. Although Russia continuously rejected the arbitration and award, on May 7, 2019, it made a joint statement with the Netherlands on Arctic cooperation, available at https://www.government.nl/documents/diplomatic-statements/2019/05/17/joint-statement-of-the-russian-federation-and-the-kingdom-of-the-netherlands-on-scientific-cooperation-in-the-russian-arctic-region-and-the-settlement-of-a-dispute.

277. *See* Nicholas Peacock, Olga Dementyeva & Denise Choung, *Inside Arbitration: Crimean Investment Treaty Arbitration Claims: Recent Developments*, HERBERT SMITH FREEHILLS (Feb. 28, 2020), https://www.herbertsmithfreehills.com/latest-thinking/inside-arbitration-crimean-investment-treaty-arbitration-claims-recent-developments.

278. UNCLOS, *supra* note 4, art. 76(8).

279. *See* STOUTENBURG, *supra* note 14, at 134.

280. Oxman, *supra* note 156, at 284; Caron, *supra* note 14, at 635; Soons, *supra* note 14, at 218.

281. *See* ROTHWELL & STEPHENS, *supra* note 2, at 116-17.

282. MAGNÚSSON, *supra* note 63, at 50-51; Tanaka, *supra* note 54, at 167.

283. *See* MAGNÚSSON, *supra* note 63, at 50-51; ROTHWELL & STEPHENS, *supra* note 2, at 119-20.

CLCS and its intended purpose. To avoid a potential dispute between broad-margin and narrow-margin states, it is preferable to preclude this distinction from affecting the outcomes of rising sea-levels.

The ISA may also play a part in such a scenario. Should an island become submerged or transform into a "rock," a state may request the ISA for a license to extract resources otherwise found in the EEZ or even OCS around such feature based on the proposition that the shelf should then constitute part of the Area. As this will likely generate a dispute with the other state, the dispute will need to be settled through the procedures on seabed disputes.[284]

iii. Non-Governmental Organizations

Many NGOs conduct activities relating to ocean sustainability and climate change mitigation and adaptation.[285] In general terms, NGOs are likely to promote environmental protection, equity, and human dignity, on account of other values.

With respect to UMVs, classification societies constitute important participants in setting the standards to govern the construction and operation of such vessels.[286] In addition, some NGOs will likely promote the use of UMVs as these will reduce emissions and allow for increased ability to monitor IUU fishing. At the same time, they may support increased regulation over the use of UMVs by states, so as to alleviate environmental risks from accidents or malfunctions.

These participants are likely to further facilitate the fortification of features by small island states and promote the view that reliance upon the *natural* land should concede to submerging and fortified features due to equity claims. In addition, some NGOs concerned with climate change may promote ocean geoengineering efforts and oppose extractions of Arctic fossil fuels. In respect of artificial islands, however, such participants may oppose increased exclusive claims by states and especially over the high seas. In any event, NGOs will participate in developing the regime by promoting transparency and accountability.

6. Investors

Investors will seek to promote rules that maximize their gains in wealth and innovation. Naturally, activities over the oceans are plentiful and complex; therefore, different investors would have different incentives and interests, depending on their field of activity and the relevant region. The goal of investors to maximize gains in wealth must, and hopefully will, be countered by states through the installment of arrangements that promote other values, and primarily environmental protection and the sustainability of fisheries.

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284. On deep-sea disputes, see Michael Lodge, *Enclosure of the Oceans versus the Common Heritage of Mankind*, 97 INT'L L. STUD. 803 (2021).

285. *See supra* note 266.

286. Chircop, *supra* note 10, at 33.

Individual investors may conduct ocean operations in ways that undermine environmental protection and create externalities. For example, fishing vessels may unintentionally transplant species disrupting local marine environments and outer space entrepreneurs may dump debris into the oceans. While some companies may be constrained by conscientious shareholders and consumers,[287] others will not. Ocean governance must evolve to reduce externalities whether within exclusive jurisdiction or over the high seas. Because of the flag-of-convenience problem, investors may become outliers on their own accord by registering their operations with participants that prescribe less stringent environmental rules or otherwise relax their enforcement, in what risks a regulatory race to the bottom.[288] Future work will need to consider whether the freedom of the high seas should be reduced as to avoid the use of a common area to create externalities that adversely affect others.

For investors, a stable investment environment is essential for business. As Lea Brilmayer and Natalie Klein point out, the "lack of a clear legal regime [] decreas[es] the likelihood of investment," emphasizing that the "recognition of legal title was considered essential" for resource exploitation.[289] Such realization is consistent with the process through which property rights have evolved within domestic law.[290] It is thus reasonable to conclude that while their interests may differ, investors, as well as certain home states, possess an incentive to promote compromises that will provide clear divisions of jurisdiction, while remaining attuned to the changing circumstances.

IV. THE PROPOSED "NEW PACKAGE-DEAL": FROM *MARE LIBERUM* TO *MARE CLAUSUM*

Ocean governance evolved in response to changing technological circumstances that presented risks and opportunities for participants.[291] As explained above, climate change and technological innovation are changing the circumstances, and thus interactions, in a continuous process that destabilizes the effectiveness of the current balance between *mare liberum* and *mare clausum*. As this process undermines the regime's effectiveness and manageability, it will trigger a process of regime evolution. How this process will unfold, and which outcomes are probable and preferable, depends on the interactions of participants. This Part will therefore outline the development process and suggest the adoption of feasible arrangements that will promote the common interest.

When discussing international "incidents," Michael Reisman explained

287. DANIEL ESTY & TODD CORT, VALUES AT WORK 4-7 (2020).

288. On the regulatory race to the bottom, see Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 604, 627-38 (1996) ("The knowledge that one's competitors intend to lower or already have lowered environmental standards induces parties to act preemptively or responsively and to lower their own standards, triggering a downward regulatory spiral and nonoptimal results."); Daniel C. Esty, *Free Trade and Environmental Protection*, *in* THE GLOBAL ENVIRONMENT: INSTITUTIONS, LAW, AND POLICY 389, 394-95 (Regina Axelrod & Stacy VanDeveer eds., 5th ed. 2019) (on relaxing environmental standards and enforcement).

289. Brilmayer & Klein, *supra* note 41, at 739.

290. *See* Demsetz, *supra* note 201.

291. *See* ROTHWELL & STEPHENS, *supra* note 2, at 1-4.

that it would be a mistake for the international lawyer to treat "incidents" in a judgmental fashion, assuming that the norm in question is "a priori and enduring" and focusing solely on whether the action violated a rule.[292] Rather, as Reisman explained, one should "evaluate[] the reactions of other relevant actors and, through those reactions, the subjective conceptions of right and/or tolerable behavior entertained by those other actors."[293] This realization extends equally to the broader scope of the international lawmaking process.

Significant changes in the circumstances in which interactions occur may generate claims by participants that violate given norms. But rather than treating such claims judgmentally, it is preferable to consider the reactions of other states, and whether, and if so how, the process of claim and counterclaim will propel the lawmaking process forward. This will indicate whether the norm will be enforced, disregarded, amended, or abandoned. In a policy-oriented jurisprudence, positive law is only the starting point. Its effects on policy choices and the outcomes of interactions constitute the objective of the analysis.

The regime governing the oceans is so complex and comprehensive that observers naturally presume its constitutional and enduring nature. Yet treating the distribution of inclusive and exclusive uses as "*a priori* and enduring" disregards the dynamics of international law-making. No equilibrium of jurisdictions, no matter how equitable when adopted, is immune to changing circumstances. At first, claims that violate the existing norm will be objected to by others, but they may generate support and evolve to formulate authoritative and controlling rules. For instance, the once excessive claim for 200-nautical-mile territorial seas, evolved into the customary EEZ.

It is important to ensure that, for participants, the costs of compliance do not outweigh the costs of withdrawal or breach.[294] Insistence upon strict adherence to outdated rules will not only undermine the achievement of the optimum order but may undermine compliance by participants, thereby generating conflicts that threaten minimum order. The proposition that the balance between exclusive and inclusive rights and jurisdictions must change does not mean that chaos must ensue. Far from it. The preservation of the rules-based global order necessitates that the regime evolves to accommodate changing circumstances. While certain probable outcomes may be unavoidable, the international community should adopt arrangements that will promote the common interest.

The changing circumstances will generate claims to increase exclusive use over the inclusive, yet the expansion of *mare clausum* over *mare liberum* is consistent with the objectives of the public order of the oceans as it optimizes the use of ocean resources for the common interest. In certain aspects, the probable outcomes would be similar to those underlying the evolution of private

292. Michael Reisman, *International Incidents: Introduction to a New Genre in the Study of International Law*, 10 YALE J. INT'L L. 1, 4 (1984).

293. *Id.* at 17.

294. On the economic approach to international law, see ERIC POSNER & ALAN SYKES, ECONOMIC FOUNDATIONS OF INTERNATIONAL LAW 12-36 (2013); Andrew Guzman, *A Compliance-Based Theory of International Law*, 90 CALIF. L. REV. 1823, 1846 (2002).

property rights from communal rights when facing the tragedy of the commons.[295] Exclusivity may encourage more efficient utilization of resources and allow for greater consideration of the interests of future generations.[296] Yet given that negative externalities produced by ocean exclusivity may affect many, if not all participants, arrangements must be installed to ensure sustainability and environmental protection.

This Article thus proposes two changes to the balance between *mare liberum* and *mare clausum* necessary to promote the optimum order and preserve the minimum order. To provide for a feasible global order, which will also be manageable vis-à-vis outliers, certain compromises must be struck to balance between the various goals, interests, and points of leverage of participants. In order to ameliorate the negative externalities and optimize the aggregated gain in values for participants, the regime must evolve to provide for a "new package-deal." The new arrangements must consist of (A) a new balance with respect to spatial allocation of rights and jurisdictions; and (B) a new balance for the substantive distribution of jurisdiction within spatial areas.

A. From "Land Dominates the Sea" to "Population Dominates the Sea"

Ocean jurisdiction responds to claims for optimizing gains in three aspects: security, economy, and environmental protection. As the previous parts explained, the changing circumstances undermine the natural *terra firma* as a predictable, stable, and appropriate source of legal title from two opposing, yet complementary directions. On the one hand, rising sea levels will lead to claims based on equity, human dignity, and wealth, for retaining ocean-based jurisdiction even in the absence of an eligible land or its natural form. At the same time, the increased technological capabilities to construct artificial islands will generate claims for ocean jurisdiction from otherwise ineligible land, given the need to promote wealth, innovation, security, and environmental protection, but also based on human dignity and equity. Given that both sets of challenges would affect gains in values, a compromise needs to be formulated to optimize the common interest. Instead of focusing on the outdated reliance upon the *terra firma*, this Article suggests focusing on the objectives of the jurisdiction to formulate a new balance between the interests and goals of participants.

Although there is merit in distinguishing between claims from artificial islands and claims from submerging features, such an approach is unproductive, as it disregards the need to achieve consensus. Admittedly, claims from artificial features will benefit mainly, yet not only, the powerful participants, and if left unchecked, could stimulate a race to grab ocean resources.[297] However, dismissing such claims because powerful participants could grab otherwise inclusive resources disregards the fact that such claims have, in the past, led to the evolution of the law. In 1945, for instance, the United States claimed exclusive sovereign rights over the resources of the natural prolongation of its

295. *See* Demsetz, *supra* note 201.
296. *Id.* at 355-56.
297. *See* Saunders, *supra* note 13, at 681.

land into and under the sea, in other words, the continental shelf, in what became known as the Truman Proclamation. This exclusive claim was, in reality, a grab of inclusive resources by a powerful participant. Yet its evolution into an exclusive entitlement up to the continental margin is revered today as the manifestation of equitability: sovereign rights requiring no occupation or proclamation.[298]

Claims from artificial islands must be checked and balanced to ensure that the preferred outcome ensues, but it would be naïve to assume that their inconsistency with the current rules will prevent their manifestation or negate their effects on the international legal process. It is unclear whether or not a participant would lay a claim to sovereignty over artificial islands on the high seas, and whether the prohibition of sovereignty therein would prevail. However, such issue is not dispositive with respect to the validity of the state's interests and necessity to exercise certain exclusive rights in the waters surrounding such features.

The situation of states that have lost their entire land territory is especially concerning with respect to reliance upon the *terra firma*, or its complete absence. While it is understandable why scholars and policymakers are swayed by the equity and human dignity concerns, such proposition generates serious public order concerns. Even if the proposition of a "landless state" can be justified through interpretation,[299] it is difficult to imagine how these entities would fulfill the obligations of sovereigns towards the population or other stakeholders.[300] The existence of precedents[301] does not make a policy choice a desirable one. As explained above, allowing such participants to retain exclusive rights may undermine the common interest, because such participants may be encouraged to overexploit the living resources and have, in effect, lost not only the interest to expend resources to protect the marine environment and sustainability, but more crucially, the capability to do so.

Focusing on the objectives of the jurisdiction rather than its source requires first distinguishing between claims relating to (1) security jurisdictions (territorial sea and contiguous zone); and (2) economic and environmental jurisdictions (EEZ, OCS, and the Area), with respect to changes in *terra firma*. This Section will then outline suggestions to attune maritime jurisdiction to the realization that the natural land is no longer an appropriate source of title.

1. Security Jurisdiction

The territorial sea and contiguous zone accommodate the coastal states' security concerns with respect to their territory, economy, and population. While submerged features would lack the land and population to warrant protection, artificial islands are currently entitled to generate only a 500-meter safety zone.

298. UNCLOS, *supra* note 4, art. 77; *see also* Brilmayer & Klein, *supra* note 41, at 720-21.

299. STOUTENBURG, *supra* note 14, at 376-85.

300. Instead of ensuring that displaced people be incorporated into societies, such arrangement risks perpetuating their refugee status.

301. STOUTENBURG, *supra* note 14, at 381.

Focusing on the objective of the jurisdiction, however, leads to the conclusion that while the former should lose any security jurisdiction, the security jurisdiction of the latter is becoming inadequate.

The initial territorial sea chipped away at *mare liberum* to protect coastal states from increased naval capabilities. It is therefore unreasonable to assume that a 500-meter safety zone around an artificial island is an enduring norm. The *Arctic Sunrise* incident illustrates that the 500-meter zone was barely sufficient to safeguard Russia's platforms. Should artificial islands begin to house population, host commercial airports, or become centers of economic activities, it is farfetched to assume that states would avoid claiming extended security jurisdiction beyond 500 meters solely because that is what the third United Nations Conference on the Law of the Sea of the 1970s considered appropriate and sufficient. The security risks alone, exacerbated by UMVs, would necessitate the seaward extension of security measures to protect the artificial island and its population.

Although equity and compassion decree that small island states should not be subjected to the dire consequences of climate change, other elements must be considered. It would be illogical to attach a territorial sea to a fully submerged feature as the objective of the regime ceases to exist with no population or installation to protect. Restricting the freedom of navigation and other inclusive rights of others, which otherwise accompany exclusive resource rights, absent cause, lacks *effet utile* and should be discarded.

2. Economic and Environmental Jurisdiction

Strong equitable considerations support retaining at least some of the resource-related rights surrounding a submerged feature, or one that has transformed into a "rock," and especially where it comes to small island states.[302] Whether the feature is artificially fortified or the state was unsuccessful at such efforts, the significant gains in wealth for the state remain valid. It is also true that certain fishing grounds used by the population of other islands, which remain habitable, surround the now ineligible feature.[303] This provides the coastal state with significant incentives to protect and preserve the maritime environment and regulate fishing. Moreover, as long as the state continues to exist as an effective entity, it may possess both the interest and capability to enforce environmental and sustainability rules in areas otherwise subject to the tragedy of the commons.[304] But if the feature was under the sovereignty of a far-removed power, the equitable considerations become less persuasive.

These equitable considerations must also be balanced against other factors, particularly the possible consequences for other states. First, there is the question of existing delimitation agreements. If the submerged feature of State A was facing State B, whose feature or landmass remains intact, retaining a delimitation which reduces the plenary 200-nautical-mile entitlement of State B undermines

302. *See* Caron, *supra* note 14, at 648-50; STOUTENBURG, *supra* note 14, at 194.
303. STOUTENBURG, *supra* note 14, at 155.
304. *See id.* at 197-98, 385.

the equitability of the treaty and may precipitate claims to reassert State B's full entitlement.[305] As this situation would not expose the relevant area to a potential tragedy of the commons, and State B will possess a similar if not greater interest than the now-removed State A to regulate IUU fishing and pollution, there is merit for allowing the redistribution of the exclusive rights to promote the common interest.

The drastic depletion of ocean fisheries indicates that severely affected participants may lay claims to inclusively use resources covered by the EEZ of a feature that has turned into a "rock" or submerged. Denying entitlements from such features would greatly benefit the major naval powers and users by opening wide areas of the high seas, otherwise enclosed within the feature's EEZ. In a similar fashion, depriving continental shelf rights from such features would augment the common heritage of mankind.[306] The limits of inclusive environmental protection powers, however, indicate that it may be preferable to extend water column rights from features that turned into a "rock" or submerged to allow for the more extensive exclusive environmental powers. But such concerns bare little effect where it comes to shelf rights, as any inclusive shelf rights as part of the international Area would be accompanied by obligations and powers to protect the marine environment.

At the same time, the existence of a population on an artificial island would not only generate security claims but also claims for wealth, equity, and human dignity. If the exclusive resource rights provided by the EEZ regime for islands are founded on the need to preserve the ability of the population to access resources,[307] then the same rationales would apply whether the feature is natural, artificially reenforced, or artificially created. It is true that equitable considerations justify distinguishing between natural and artificial features—to deny developed states the ability to further increase exclusive rights. However, as artificial features develop and become indistinguishable from natural features in both human habitation and economic life,[308] other equitable considerations will be raised, to provide the population with rights to, at the very least, the living resources and powers relating to security and environmental protection.

Providing states with certain exclusive rights generates incentives for them to counter what would otherwise be a tragedy of the commons.[309] It thus stands to reason that the international community will gain from the exercise of exclusive rights by certain, and especially powerful, participants. These participants would have an interest in exerting their power in any area subject to their jurisdiction to protect the population through efforts to reduce pollution and combat unsustainable fishing. The fact that this process could be abused[310] does not negate its potential benefits but only indicates that such claims must be internationally regulated and balanced with the interests of the international

305. *But see* PURCELL, *supra* note 14, at 237.
306. *Id.* at 240.
307. *See supra* Part I.
308. *See* PROELSS, *supra* note 39, at 865.
309. Posner & Sykes, *supra* note 7.
310. Saunders, *supra* note 13, at 681.

community. Such balancing exercises must therefore be conducted via the negotiations of a "new package-deal," rather than left to state practice, which, in any event, favors the more powerful participants.

3. Suggestions

To promote the optimum order, it is suggested that the principle that the "Land Dominates the Sea" should evolve to include elements depicted as "Population Dominates the Sea." Rather than focusing on the natural or artificial character of a feature, it would be more logical and beneficial to focus on its population and economic activity. A new balance must be struck to move away from reliance upon land towards a more balanced, and nuanced, source of rights and jurisdictions. Although the specifics of the rules will evolve through the lawmaking process, several suggestions may help reach a viable compromise.

As part of the negotiating process, claims with respect to artificial islands must be tied to ameliorating the adverse effects of rising sea levels on submerging features, thus promoting a compromise between developing and developed states. As both sets of claims relate to a shift from the natural *terra firma*, their balancing will produce a new compromise attuned to the interests of the participants involved. Although any concession with respect to artificial features will necessarily expand *mare clausum* over *mare liberum*, such change is consistent with the public order of the oceans as it responds to the same concerns that led to the expansion of exclusive rights from natural land.

To accommodate security concerns, increased security jurisdiction must be attached to artificial islands with population or economic activity. Mimicking the territorial sea regime, such governance must prescribe for inclusive use by others and be limited in spatial extent. To mitigate concerns over a potential grab for resources, it may be preferable to begin with a narrower spatial extent, for instance, three nautical miles, yet the precise distance must depend on specific risks and will inevitably be subject to further modification. Although it will limit *mare liberum* and confine the freedom of navigation, such change will be conducive for the public order as it will allow states to exercise powers necessary to protect their populations and fulfill their sovereign obligations. Absent such a rule, innovation with respect to artificial islands will be severely weakened due to the exposure of such features to significant risks that will undermine their development and negate the benefits of such infrastructure to the population. This rule will also provide the state with powers necessary to confront increased risks from UMVs in the vicinity of such features. Focusing on the population or economic activity rather than the *terra firma* will allow the law of the sea to fulfill the objectives of the jurisdiction and promote the common interest.

With respect to high-seas artificial islands, in addition to security powers, certain exclusive rights to living resources and environmental powers in the surrounding waters should be recognized. The precise spatial extent will likely be less than the arbitrary number of 200 nautical miles, yet any rights must be conditioned on environmental obligations as well as stipulate procedures for inclusive access by others beyond merely the surplus. Although this will reduce the availability of inclusive access to fisheries, the benefits to the international

community as a whole would be significant, as this would mitigate the tragedy of the commons and generate incentives to protect the marine environment and prevent IUU fishing. Shelf rights, however, should remain with the international community, as part of the common heritage of mankind, due to the absence of the relevant health and environmental considerations.

Along with rules legitimizing jurisdiction off artificially manipulated land, the international community should respond to claims with respect to changes to the *terra firma* due to rising sea levels. In order to avoid unnecessary confinements of inclusive rights, completely submerged features should not be allowed to exercise territorial sea powers. However, in order to facilitate international sustainability and environmental goals, features that have lost their eligibility or submerged should be allowed to retain rights to living resources conditioned on the existence of nearby population centers and the ability to exercise power to protect and preserve the marine environment. Once such ability is lost, the risk and costs to the international community justify reverting the area to high seas with inclusive environmental obligations. Such arrangement will alleviate some of the concerns surrounding small island states and limit the potential expansion of the tragedy of the commons through communal use, while refraining from unnecessary confinement of inclusive rights of navigation and overflight important to naval powers.

Yet given the relative weakness of inclusive environmental protection, it may be preferable to establish procedures in which states are allowed to transfer both water column rights and obligations to able and willing participants; such treaties must be governed by the amended convention with the jurisdiction transferred or leased as a "package" including the assumption of obligations. This will allow, for example, a small island state to lease rights off a submerged feature to another state rather than losing the rights, while ensuring that the other state exercises powers to protect the marine environment in lieu of the now distant small island state. Such claims may be opposed by participants wishing to exploit the resources as part of the high-seas regime, so a possible solution would be to expand inclusive rights to such living resources in a method similar to that proposed above for artificial islands over the high seas. In other words, in such transfers of rights, the transferee would be required to allow for a certain percentage of the available catch to be inclusively used, subject to environmental protection and sustainability measures. These changes will be attuned to the objectives of the jurisdiction while promoting the common interest by ensuring the ability and interest of participants to supervise the sustainable use of natural resources and protect the marine environment.

With respect to the division of maritime jurisdiction, states should be allowed to terminate and renegotiate delimitation treaties when faced with an ineligible or submerged feature that adversely affected their title to exclusive rights. Such a norm may alleviate potential conflicts among states while the specific geographical circumstances will not exacerbate the tragedy of the commons. If we return to our example above of two states where a feature of State A within 100 nautical miles from State B became a "rock" or submerged, State B should be allowed to renegotiate any delimitation, so as to neither be

subject to a reduction in its plenary 200-nautical-mile EEZ without cause nor obligated to respect territorial sea powers from a now submerged feature within its otherwise exclusive EEZ. Such a rule must, however, accommodate existing contracts and artificial installations prescribed by the previous EEZ state through a type of sunset clause.

The rationales that justify the retention of resource rights and environmental powers from submerged features on account of the international community do not apply when it comes to the 200-nautical-mile entitlement of another state. As a delimitation treaty is *res inter alios acta*, from the perspective of non-parties, jurisdiction from a feature that has lost its eligibility either reverts to high seas or is otherwise subject to the proposal above. This rule will thus only affect the division of jurisdiction as between the parties. As such division was intended to achieve an equitable result, however, retention of jurisdiction on account of the 200-nautical-mile entitlement of another state undermines the overall equitability of access to maritime resources and may generate conflicts. As the other state would, in any event, exercise exclusive jurisdiction over such waters alongside the powers intended to promote the common interest, there is no risk of extending the tragedy of the commons over them in contrast to any reversion to high seas.

Although such a rule may place a state in a losing position, it will provide significant benefits to the promotion of the common interest. It would be wrong to assume that stability is the objective of maritime delimitation, especially where it comes to the EEZ and continental shelf. Were the objective stability, the delimitation provision should have prescribed for equidistance as the default rule or stipulate that, once concluded, the delimitation be final and binding; yet it does not. Delimitations must produce an equitable result between the parties, but from the perspective of the international community, they must promote the common interest to optimize sustainable utilization of resources. The loss of eligibility indicates at least a reduced interest and capability of the state to fulfill the accompanying obligations for the common interest. Rebalancing the division in a manner that provides the rights and obligations to the state with an eligible feature, and thus interest to exercise the rights sustainably, will promote the common interest.

Though the territorial sea is under state sovereignty, which complicates the matter, by terminating the treaty, the division of jurisdiction will simply revert to equidistance. Although one state may suffer a loss, equidistance may be considered inherently fair, and attuned to the fact that jurisdiction must follow the interest to exercise it; if coasts shifted or features submerged, the attached security concerns changed. The other state thus possesses a stronger interest to protect its coast and population, which at least in theory follows an equidistance division.

The last suggestion concerns the separation between water column and shelf rights where it comes to changes in *terra firma*. First, as mentioned above, artificial islands should not be allowed to generate seabed rights on account of the Area. Thus, if the water rights proposed above are recognized, procedures must be put in place to allow for inclusive shelf use. Second, when an island

submerges or becomes a "rock," shelf rights should revert to the Area. The CLCS procedure should not enshrine an encroachment upon the common heritage of mankind when the source of legal title no longer exists.[311] Existing private contractors should, however, retain extraction rights for a defined period to be renegotiated with the ISA. Such rule may provide a benefit for those able to reinforce features or lead to the waste of resources in this regard.[312] Yet the contrary proposition would undermine the common interest by retaining shelf rights with participants lacking a source of title on account of the international community.

An alternative for accommodating the changing circumstances would retain stability but alter the substantive divisions of rights and obligations within zones. This would be responsive to the fact that sea-level rise is a gradual process, which may require procedures or arrangements for identifying "trigger points" for changes in the otherwise stable boundaries or limits. But this adjustment is less preferable than the approach proposed in this Article. First, it assumes that insisting upon stability when the factual predicate for it is disappearing will promote the common interest. But this prejudices participants on the "losing side" of the stability.[313] Second, any renegotiation of substantive norms would require a general consensus either for adjusting all such jurisdictional zones even absent a reason for doing so, or for a variable application which will perforce be dynamic with agreed "trigger points." Finally, one must keep in mind that if procedures for application are subject to mandatory dispute settlement, then disputes about the law may in fact promote compliance with international law.[314] The law of the sea is no stranger to open textured norms that are developed through practice, for example, Article 121(3) on "rocks," or procedures entailing objective analysis such as the CLCS. With objective control mechanisms in place, dispute settlement may develop norms to identify "trigger points" in accordance with the interests of other states to initiate such procedures.[315]

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311. *See also* PURCELL, *supra* note 14, at 240.

312. *See* Caron, *supra* note 14, at 641.

313. It may be true that stability could provide certain advantages for the common interest, yet in contrast to territorial stability, in the context of the law of the sea, this would refer primarily to the allocation of resources.

314. *See* Monika Hakimi, *Constructing an International Community*, 111 AM. J. INT'L L. 317 (2017) (suggesting that "conflict, especially conflict that manifests in law, is not necessarily corrosive to an international community" but rather "[t]o the contrary, it often is a unifying force that helps constitute and fortify the community and support the governance project").

315. Although it is beyond the scope of this Article, it should be noted that through the dynamics of the law of the sea, control mechanisms will emerge for all stages of the claim process, in other words, pre-claim, claim-review, and post-claim. For example, the state should be required to demonstrate that its claim is genuine rather than manufactured and is consistent with the rationales of the proposed changes. Given the focus on the population and economic activity, this may include a type of "human rights impact assessment" (for such a proposal in the investment and trade context, see Diane Desierto, *Shifting Sands in the International Economic System: Arbitrage in International Economic Law and Human Rights*, 49 GEO. J. INT'L L. 3 (2018)). Given the effects of the claims on state rights, the claim-review process may include independent review by a committee of experts from different fields, including human rights, sustainable development, marine biology, environmental protection, economics, security, and others deemed essential, alongside representatives of different groups of states and international organizations.

Although some of the above suggestions may seem inequitable, and overly favorable to the major powers, it is important to understand that these participants play a key role in shaping international law. It would be unrealistic to suggest rules that completely ignore their interests because such rules would not gain the necessary consensus and support to sway the policy choices of participants. While UNCLOS provides for significant exclusive gains for developing states, it does so by balancing their gains with the interests and goals of other participants, especially the major naval powers. Future evolution of UNCLOS could not be advanced in any other manner.

The fine-tuning of the rules proposed above will develop through the lawmaking process. These proposed modifications are feasible for adoption, as they balance the goals and interests of various participants. They are therefore effective at optimizing gains in values to as many participants as possible and safeguarding against outliers by, *inter alia*, being subject to the dispute settlement mechanism of UNCLOS if adopted through amendments rather than state practice.

B. From Rights in the Waters to Rights to the Waters

The law of the sea balances between the rights and jurisdictions of the coastal state in a spatial area, and the rights of all other states in such areas. The flag-of-convenience problem, coupled with the risks posed by UMVs and climate change, undermine the balance underlying this division of jurisdiction, thus triggering a process of regime evolution. This Section will focus on the objective of the balance to propose a feasible amendment that will optimize the gains in values.

The EEZ regime has been originally conceived as an enumerated set of rights *in* the waters rather than rights *to* the waters in comparison to the regime of the territorial sea. The circumstances that justified such balance under UNCLOS are changing, with states claiming ever increasing rights and powers within the EEZ and contiguous zone, at the expense of other states.[316] As the EEZ regime originated as a compromise between *mare liberum* and *mare clausum*, between the high seas and a 200-nautical-miles territorial sea, it is unsurprising that states have been chipping away at the compromise to increase their exclusive rights. The increased construction of artificial islands and the introduction of UMVs will further fuel this process by generating risks for coastal states to be accompanied by claims for increased jurisdiction.

Unmanned vessels will generate increased risks to the wealth, health, security, and environmental protection of coastal states. As mentioned above,

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Finally, a post-claim process may include periodic review and a right of the committee and affected participants to initiate such review process. While a dispute settlement process through the International Court of Justice or the International Tribunal for the Law of the Sea is an essential control mechanism, it is important to appreciate that a simple rules-based textual approach is insufficient for evaluating the legality of such highly dynamic claims. While the final shape and scope of the control mechanisms is unclear, the inherent dynamism of the law of the sea will generate a solution attuned to the interests of the various actors involved.

316. *See, e.g.*, Kraska, *Excessive*, *supra* note 4; Molenaar, *supra* note 122.

without a crew on board, the coastal state would be deprived of significant enforcement capabilities to deter violations and be increasingly exposed to risks from otherwise preventable accidents or malfunctions. Although the benefits of UMVs for reducing environmental risks and costs justify their development and deployment, their risks to the coastal states will generate claims to confine and regulate their use.

The introduction of cyber-capabilities has already led states, primarily China, to claim to regulate innocent passage and even navigation within the EEZ.[317] Although such claims are unlawful under current rules, as risks increase, and more claims and counterclaims are made, they will impact the regime's development. Even under the current situations, it is evident that *mare liberum* is giving way to *mare clausum* within the EEZ. This process will only be accelerated by increased risks generated by UMVs, artificial islands, and cyber-capabilities. Although some may claim that such a process must be arrested, since it is unlawful,[318] it is more pragmatic to recognize it as an indication that the current balance no longer promotes the optimum gain in values and must develop further. To accommodate the conflicting interests of participants, this Article suggests another compromise solution.

1. Suggestions

The EEZ regime should transform from rights *in* the waters to rights *to* the waters. Such change will favor exclusive over inclusive rights, yet it will provide states with powers and jurisdictions necessary to optimize the use of ocean resources and ameliorate the externalities produced by developing technological capabilities. As such, fulfilling the common interest protected by *mare liberum* requires increasing exclusive rights and jurisdictions within the waters on account of flag-states.

In order to promote and facilitate the use of UMVs, the protective powers of coastal states should be increased. First, they should be allowed to regulate innocent passage based on the construction and manning of vessels. UMVs are unmanned and thus present the coastal state with increased risks for safety, security, and the environment. It is therefore reasonable to allow the coastal state to mitigate such risks in the vicinity of its coast. In addition, the contiguous zone powers should be interpreted in an evolutionary manner to allow the state to implement protective powers to safeguard its security and environment.[319] As UMVs will present increased risks to states, expanding their ability to confront adverse actors will be beneficial. As contiguous zone rights are non-exclusive, the international community should consider whether a twelve-nautical-mile band is still effective at confronting risks from UMVs and cyber-threats. Because

317. *See* Lubin, *supra* note 31, at 28-44; Ringbom, *supra* note 15, at 144; Pedrozo, *supra* note 274.

318. *See, e.g.,* Pedrozo, *supra* note 274, at 476-77.

319. *See, e.g.*, PROELSS, *supra* note 39, at 267; *cf. id.* at 270-71. It should be noted that the International Court of Justice has recently ruled that customary international law has not evolved to include security and environmental protection in general within the powers of the coastal state within its contiguous zone. *See Alleged Violations*, Judgment, ¶¶ 177-80.

the risks have evolved from the 1950s, it may be beneficial to revisit the spatial extent of such powers. As contiguous zone powers provide for limited adverse effects on other states and the freedom of navigation, their spatial expansion should encounter limited opposition. Such change may be effectuated in a manner similar to Article 303 of UNCLOS.

In addition, coastal states should be recognized with limited rights to regulate passage of UMVs in the remainder of the EEZ beyond its contiguous zone. This can be done through the operation of Article 59, by practice, or amendment. The unconditional inclusion of UMVs within the definition of ships for Article 58 generates difficulties. Whether such interpretation is cogent based on current rules is immaterial, as the risks posed to coastal states far exceed those underlying the balance between exclusive and inclusive jurisdiction in the EEZ under UNCLOS.[320] Expanded jurisdiction may include requirements of notification and monitoring, a right to visit for inspection, or registration. Such jurisdiction will bring the EEZ closer to a territorial sea with respect to such vessels, yet it will facilitate the deployment of UMVs for environmental gains, while ameliorating some of the risks posed by such vessels and increased cyber threats to the coastal state and the marine environment of the EEZ.

The introduction of UMVs, the depletion of fisheries, and violations of human rights over the oceans[321] also justify the expansion of coastal state jurisdiction on account of flag-states where it comes to enforcement of laws and regulations within the EEZ, primarily with respect to environmental protection. As a sub-category, Arctic states should be recognized with increased control over UMVs and other vessels traveling through the region. Although it may cease to be an ice-covered area,[322] the fragile marine environment justifies an increase in exclusive jurisdiction, which reduces risks posed by inclusive rights and primarily the tragedy of the commons.

As mentioned above, future work will need to tackle the conflict between ocean rights and sustainable development on a global scale. Parallel obligations may be required to ensure that ocean resources are not utilized in ways that create externalities. As a preliminary suggestion, it may be worth expanding the coastal state's obligations and powers to confront pollution within the EEZ and territorial sea, for example, a right to impose fees on pollution.[323] Although such charge may undermine the freedom of navigation, and may need to exclude certain military activities, it may be a necessary component of any domestic efforts to reduce environmental externalities. As a point of reference, UNCLOS recognizes the right to impose scientifically-based, non-discriminatory, pollution-control measures in ice-covered areas due to fragile environmental conditions.[324] Yet since UNCLOS was signed, the fragility of the entire marine

320. *See also* Veal, *supra* note 15, at 27.

321. The issue of ocean exclusivity and human rights is developed further in Naama Omri & Gershon Hasin, *Rethinking Ocean Exclusivity; The Case of Human Rights*, 44 U. PA. J. INT'L L. 947 (2023).

322. UNCLOS, *supra* note 4, art. 234.

323. *See, e.g.*, Elliott & Esty, *supra* note 237.

324. UNCLOS, *supra* note 4, art. 234.

ecosystem has clarified: can the law honestly still ascribe to such distinction? Such power will allow the state to better adapt to and mitigate greenhouse gas emissions, thereby promoting the common interest in confronting climate change.

The United Nations has convened negotiations for an instrument to promote sustainability and conservation of marine biodiversity on the high seas.[325] The text of the treaty, titled "Agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction" was recently finalized and adopted. The treaty, intended to govern the high seas, provides opportunities for increasing environmental enforcement capabilities through area management tools and environmental impact assessments, while promoting compliance through monitoring, verification, and shaming.[326] Although this instrument is intended to promote sustainability in areas outside national jurisdiction, its hopeful ratification and entry into force may serve as precedent for further increasing environmental powers within national jurisdiction as this Article proposes.

With the objective of jurisdictions to protect the coastal state, its economic rights, and the marine environment, the law must evolve in response to risks unanticipated when UNCLOS was negotiated. The proposals above will augment powers required to adapt to, and mitigate the effects of, climate change by increasing the environmental powers of the coastal state within maritime zones. They will also allow coastal states to better respond to risks posed to their territory and environment from UMVs. Thus, these changes will promote the development and deployment of such vessels that are beneficial for climate change efforts. The outlined suggestions propose a balance that will arrest the escalation process and retain elements of *mare liberum* while recognizing the need to expand *mare clausum* to confront the changing circumstances.

The proposals are feasible rules for adoption either as amendments or through state practice and will be effective at optimizing the gains in values. Acceding to certain increased exclusive claims while retaining elements of the freedom of the high seas will reduce the compliance costs for participants, thus increasing the regime's manageability vis-à-vis outliers.

V. CONCLUSION

The law of the sea is a dynamic and evolutionary regime of global governance. Despite the history of its evolution, scholarship tends to view the rules governing the distribution of access to ocean resources as *a priori* and enduring. But the global governance of the oceans has always been attuned to the changing circumstances and the capabilities of participants. As this Article explained, climate change and technological innovation are changing the

325. *See* UNITED NATIONS, *Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction*, https://www.un.org/bbnj/ (last visited July 10, 2023).

326. *Agreement on the Conservation and Sustainable Use of Marine Biological Diversity*, *supra* note 179.

circumstances over the oceans, rendering the continued reliance upon the natural land as a source of rights and obligations over the oceans inappropriate and failing to provide for the optimum order. This Article thus proposes a new balance between inclusive and exclusive rights. While *mare liberum* will further give way to *mare clausum*, the law of the sea must be amended to balance the goals and interests of the various participants involved to provide for the aggregated gain in values for affected stakeholders.

Interested states and non-state actors may promote these suggested arrangements through negotiations at the United Nations, or otherwise express their opinions through political statements, commentaries, or legal arrangements. The consideration of such paths is beyond the scope of this Article and is reserved for future work. To conclude, UNCLOS was a true "package-deal." But in light of climate change and technological innovation, a "new package-deal" is needed.