
# Boundaries, Adrift:

# Entitlements and Delimitation in Shifting Seas

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# Abstract

Sea-level rise threatens to undermine the legal order of the oceans. By causing a retreat in the shoreline, it can submerge critical basepoints and alter the status of features from which entitlement limits and delimited boundaries are measured. This issue has received significant academic attention, yet much of it is dedicated to the study of adaptation. The consensus is that the existing legal framework will have to be replaced by one that provides for stable baselines and limits. This thesis does not deny the need for adaptation. However, it argues for an enhanced focus on resilience. Recognizing that new rules to address sea-level rise will require significant time to be adopted, the thesis explores what coastal states can do, under existing law, to stabilize their maritime claims. Examining the United Nations Convention on the Law of the Sea, the thesis unearths significant resilience within its provisions. It argues that the ambulation of the normal baseline under Article 5 is not automatic but is controlled by the coastal state through the revision of charts. It demonstrates how vertical datum calculations could be used to tether the movements of the charted baseline. It offers a doctrinal justification for the construction of straight baselines on coasts impacted by sea-level rise under Article 7(2). It uncovers the legal basis for the use of coastal fortification measures to stabilize the baseline within Article 11. It justifies why continental shelf limits are resilient to the effects of sea-level rise, determining that there are two routes to their permanence under Article 76(8) and Article 76(9). Finally, it reveals that the opposability of delimited boundaries cannot be successfully challenged in the context of sea-level rise due to their status as executed treaty provisions. The doctrinal limits to which the Convention's provisions may be applied are also studied. The thesis identifies each measure as one with promising yet finite utility. It concludes by outlining a plan of action that coastal states may follow to enhance the resilience of their maritime claims, based on the preceding legal analysis.

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# Table of Abbreviations

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| **CJIL** | Chinese Journal of International Law |
| **CLCS** | Commission on the Limits of the Continental Shelf |
| **DOALOS** | United Nations Division for Ocean Affairs and the Law of the Sea |
| **EEZ** | Exclusive Economic Zone |
| **ICJ** | International Court of Justice |
| **IHO** | International Hydrographic Organization |
| **IJMCL** | International Journal of Marine and Coastal Law |
| **ILA** | International Law Association |
| **ILC** | International Law Commission |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **ITLOS** | International Tribunal for the Law of the Sea |
| **LOSC** | United Nations Convention on the Law of the Sea |
| **MPEPIL** | Max Planck Encyclopedia of Public International Law |
| **NM** | Nautical Miles |

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| **ODIL** | Ocean Development & International Law |
| **PCA** | Permanent Court of Arbitration |
| **PCIJ** | Permanent Court of International Justice |
| **UNCLOS** | United Nations Conference on the Law of the Sea |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **VCLT** | Vienna Convention on the Law of Treaties |
| **WTO** | World Trade Organization |

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# Introduction

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## I. Resilience and Adaptation

The Paris Agreement identifies 'strengthening resilience…to climate change' as a global goal that all parties must adhere to.[1] Equally, it recognizes 'that the current need for adaptation [in response to climate change] is significant'.[2] Although the Agreement does not define what resilience and adaptation mean,[3] it acknowledges that the terms extend beyond ecological systems, and include within their normative fold the stability of human systems.[4] Moreover, as Pérez and Kallhauge note,[5] the Paris Agreement considers adaptation and resilience to be interlinked concepts, along with mitigation, such that all three are necessary to ensure an adequate response to climate change.[6] The Agreement implicitly recognizes the inverse relation

[1] Article 7(1) Paris Agreement to the United Nations Framework Convention on Climate Change (adopted 12 December 2015, entered into force 4 November 2016) TIAS No.16-1104, with 193 Parties.

[2] Article 7(4) Paris Agreement.

[3] The Oxford English Dictionary defines resilience as 'the quality or fact of being able to recover quickly or easily from, or resist being affected by, a misfortune, shock, illness, etc.': "Resilience, n." in *Oxford English Dictionary Online* (2022). It defines adaptation as 'the action or process of adapting one thing to fit with another, or suit specified conditions, especially a new or changed environment': "Adaptation, n." in *Oxford English Dictionary Online* (2022).

[4] Article 7(9)(e) Paris Agreement. See: Pérez & Kallhauge, 'Adaptation' in Klein et al (eds), *The Paris Agreement on Climate Change: Analysis and Commentary* (2017) 210; Wenger, 'Article 7' in van Calster & Reins (eds), *The Paris Agreement on Climate Change: A Commentary* (2021) 172.

[5] Pérez and Kallhauge (n 9) 203.

[6] Article 7(1) Paris Agreement.

between these concepts, such that greater mitigation and resilience negate the need for adaptation.[7]

The Intergovernmental Panel on Climate Change, in its latest Assessment Report, defines resilience as 'the capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure'.[8] The Report, noting that adaptation covers both natural and human systems, defines the term as 'the process of adjustment to actual or expected climate and its effects in order to moderate harm'.[9] This is clear acknowledgement that resilience and adaptation, in the context of climate change, are not simply qualities assessed vis-à-vis ecology but ones that also extend to social and economic frameworks. The Report notes that the goal of bolstering climate-change resilience and adaptation includes the stability of infrastructure, energy transmission, food production, water security, political structures and all other human systems.[10] One such system, oft omitted in discussions on the repercussions of climate change, is the legal system.

The law, though abstract, is designed to regulate the physical world. Foreseeably, then, as climate change begins to alter the physical world, it can challenge the conditions for which legal frameworks were designed, testing their resilience and prompting their adaptation. Several instances of such potential adaptation have already been outlined in academia. Human

[7] Pérez and Kallhauge (n 9) 205.

[8] IPCC, *Special Report on Impacts, Adaptation, and Vulnerability – Summary for Policymakers* (2022) 9. Established in 1988 by the United Nations Environment Programme and the World Meteorological Organization, the Intergovernmental Panel on Climate Change ('IPCC') is the principal international body for assessing the science related to climate change. It provides regular assessments on future impacts of climate change through a rigorous analysis of existing scientific literature. Each assessment is conducted by leading scientists from across the globe and undergoes multiple rounds of drafting and peer review to ensure accuracy and transparency. The Panel is open for membership to all states that are members of the World Meteorological Organization and the United Nations, and currently has 195 states parties. See: <https://www.ipcc.ch/about/>.

[9] Ibid 7.

[10] Ibid.

rights obligations may have to expand to account for the environmental harm that individuals suffer.[11] Tax law may require alteration to discourage emissions, as part of the mitigation effort.[12] Intellectual property rights may be weakened to broaden the availability of critical technology in the fight against climate change.[13] The scope of national and international criminal law may broaden to include the crime of ecocide.[14] The legal tests employed for causation and contribution, to establish liability for environmental damage, could require revision.[15] International refugee law may have to be altered to accommodate climate refugees.[16] Disaster laws might need improvement to account for the increased frequency and intensity of extreme weather events.[17] The test for statehood in international law could be disputed as small-island nations face the inundation of their territory.[18] And the international legal framework for

[11] Shelton, 'Equitable utilization of the atmosphere: a rights-based approach to climate change?' in Humphreys (ed), *Human Rights and Climate Change* (2009) 92; McInerney-Lankford et al, *Human Rights and Climate Change: A Review of the International Legal Dimensions* (2011) 8; Knox, 'Human Rights Principles and Climate Change' in Gray et al (eds), *The Oxford Handbook of International Climate Change Law* (2016) 221-2.

[12] Harper, 'Climate Change and Tax Policy' 30(2) BCICLR (2007) 411; Aldy et al, 'A Tax-Based Approach to Slowing Global Climate Change' 61(3) National Tax Journal (2008) 493; Hsu, 'International Market Mechanisms' in Gray et al (n 11) 251.

[13] Sarnoff, 'Intellectual Property and Climate Change, with an Emphasis on Patents and Technology Transfer' in Gray et al (n 11) 392; Raiser et al, 'Corporatization of the Climate? Innovation, intellectual property rights, and patents for climate change mitigation' 27 Energy Research & Social Science (2017) 1.

[14] White, 'Criminological Perspectives on Climate Change, Violence and Ecocide' 3(4) Current Climate Change Reports (2017) 243; Mwanza 'Enhancing accountability for environmental damage under international law: Ecocide as a legal fulfilment of ecological integrity' 19(2) Melbourne Journal of International Law (2018) 586.

[15] Newell, 'Climate change, human rights and corporate accountability' in Humphreys (ed), *Human Rights and Climate Change* (2009) 126; Voigt, 'Climate Change and Damages' in Gray et al (n 11) 465.

[16] McAdam, 'Climate Change Related Displacement of Persons' in Gray et al (n 11) 520; McAdam, 'Displacement in the Context of Climate Change and Disasters' in Costello et al, *The Oxford Handbook of International Refugee Law* (2021) 832.

[17] ILC, Draft Articles on the Protection of Persons in the Event of Disasters, with Commentaries, Vol.II Part 2 ILC Yearbook (2016) 22-23; Lyster, *Climate Justice and Disaster Law* (2016) 227; Farber, 'Climate Change and Disaster Law' in Gray et al (n 11) 589; Samuel et al, 'Introduction' in Samuel et al (eds), *The Cambridge Handbook of Disaster Risk Reduction and International Law* (2019) 1, 4.

[18] Camprubí, *Statehood under Water* (2016) 78; ILA Committee on International Law and Sea Level Rise, Sydney Report (2018) 22.

maritime entitlements and delimitation may require improvement to account for coastline fluctuations in a shifting sea.[19]

It is this final instance that constitutes the focal point of this thesis. Under their existing legal framework, the oceans are divided into zones of jurisdiction including the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf. Within each zone, a coastal state is only entitled to exercise specific rights as defined by the United Nations Convention on the Law of the Sea ('LOSC')[20] and by customary international law. Where the maritime entitlement of one state overlaps with that of another, the two states may delimit a boundary between their zones. Crucially, the position of entitlement limits and delimited boundaries are calculated through a baseline, which is constructed by employing points on the shore. As a result, sea-level rise carries tremendous potential to disrupt the law of entitlements and delimitation by altering the physical location of the coastline. This was acknowledged by the International Law Commission ('ILC'), which included the topic in its long-term programme of work and established a Study Group to prepare reports on it.[21] The International Law Association ('ILA') Executive Council also established a Committee on International Law and Sea Level Rise to study the impact of coastal retreat on entitlements and delimitation, and to develop proposals in relation to such loss.[22] The significant attention garnered by this topic

[19] Soons, 'The Effects of a Rising Sea Level on Maritime Limits and Boundaries' 37(2) NILR (1990) 207; Freestone & Pethick, 'Sea Level Rise and Maritime Boundaries' in Blake (ed), *Maritime Boundaries: World Boundaries* (1994) 73; Schofield, 'Shifting Limits? Sea Level Rise & Options to Secure Claims' 3(4) CCLR (2009) 405; Caron, 'Climate Change, Sea Level Rise and the Coming Uncertainty' in Hong & van Dyke (eds), *Maritime Boundary Disputes, Settlement Processes, and the Law of the Sea* (2009) 15; Hayashi, 'Sea-Level Rise and the Law of the Sea' in Vidas & Schei (eds), *The World Ocean in Globalisation* (2011) 198.

[20] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 397 (1982), with 168 Parties.

[21] ILC, 'Sea level rise in relation to international law: First issues paper by Aurescu and Oral' A/CN.4/740 (2020) 3.

[22] ILA (n 18) 8.

from international bodies underscores the urgent need to find a workable solution for unstable maritime limits and boundaries.

Predictably, therefore, most authorities have argued for adaptation in response to this challenge, recommending that the present legal framework for maritime zones be replaced by one that prescribes stable entitlement limits and delimited boundaries that are independent of the shore.[23] Unfortunately, this focus on adaptation has come at the expense of a thorough study of resilience. The central claim of this thesis is that the capacity of the existing legal framework for baselines, entitlement limits and delimited boundaries to withstand the effects of sea-level rise is understudied. The thesis disputes the focus on adaptation found in the literature on this topic, arguing for greater attention to the subject of resilience, for three reasons. First, it is unclear how political consensus will be generated to adopt new rules since several prominent states stand to gain from the impact of sea-level rise. Therefore, the focus on adaptation runs the risk of leaving coastal states with no actionable options to preserve their entitlements. A study of resilience, on the other hand, insures coastal states against political deadlock, providing them tools that they may apply to stabilise their maritime claims even if new rules cannot be adopted. Second, even if political consensus for new rules is generated, it will be some time before these new rules can be formulated and implemented. In the interim, coastal states will continue to suffer losses of maritime space. A study of resilience offers coastal states strategies that they can apply in the present to defer such losses and ensure their maritime claims live to see the promised future of a new legal framework. Third, if existing rules are to be changed, this cannot occur until their resilience to sea-level rise is understood in depth. How else can one know which rules require change and which do not? It is therefore necessary to

[23] See, for instance: Soons (n 19); Freestone & Pethick (n 19); Schofield (n 19); Caron (n 19); Hayashi (n 19); ILA (n 18); Aurescu & Oral (n 21).

widen focus from adaptation in order also to study the resilience of the existing legal framework in sufficient depth.[24] That is what this thesis proposes to do.

By analysing the resilience of the LOSC framework for baselines, entitlement limits and delimited boundaries, the thesis outlines critical measures that coastal states may employ to stabilise their maritime claims. It demonstrates that vertical datum calculations can be used to curtail the movement of the normal baseline, established under Article 5 LOSC. Straight baselines can be drawn at highly unstable coasts threatened by sea-level rise, and the obligation to revise them can be deferred as per Article 7(2) LOSC. Coastal fortification can be employed to stabilise the baseline using Article 11 LOSC. Continental shelf limits can be established permanently through Article 76 LOSC. Finally, the opposability of delimited maritime boundaries cannot be questioned due to their status as executed treaty provisions, and due to the principle of stability of boundaries. Though occasionally identified in the literature, these measures are dismissed without sufficient consideration. As a result, they lack a detailed doctrinal justification for their application to situations of sea-level rise. Equally, several criticisms raised against such application remain uncontested. The thesis addresses these gaps.

After explaining the legal basis for the application of LOSC provisions to situations of sea-level rise, the thesis offers a plan of action that demonstrates how the combined application of these provisions could allow a coastal state to preserve the spatial configuration of its maritime entitlements. It identifies the delimitation of maritime boundaries and the establishment of continental shelf limits as the first steps a coastal state should undertake to preserve its maritime claims, since these are found to be the most resilient to the effects of sea-level rise. As a result, the only entitlements of a coastal state that remain vulnerable to the effects of sea-level rise are undelimited exclusive economic zones and territorial seas. Their

[24] Each of these three claims is analysed in greater detail below, in Chapter 1.

limits can be stabilised by curtailing the movement of the baseline from which they are measured. This can be done through strategic vertical datum calculations, the use of straight baselines, and coastal fortification.

Eventually, sea-level rise of a sufficient scale will make its impact known no matter how the baseline is sought to be stabilised. When this occurs, the coastal state is under an obligation to revise its baseline. However, since ambulation is not automatic, the coastal state carries some degree of control over the manner in which it occurs. It can prepare for such change, chart it and publicise it to all relevant stakeholders in advance. As a result, the ambulation of the baseline will not create uncertainty for those who operate in the relevant waters. Once each of these steps is exhausted, it appears inevitable that baselines and the limits of undelimited territorial seas and exclusive economic zones will have to be revised. However, through this plan of action, the thesis demonstrates that the LOSC offers promising albeit finite resilience to counter the effects of sea-level rise.

In the context of this thesis, 'resilience' is employed in two senses. At the macro level, it is used to describe the ability of the existing framework for the law of the sea, in its entirety, to withstand the impacts of sea-level rise and to continue serving as an efficient and predictable legal order for the oceans. However, this macro-resilience is incontrovertibly dependent on the individual robustness of baselines, entitlement limits and maritime boundaries employed to divide the oceans. This latter robustness constitutes the second sense in which 'resilience' is employed, used to describe the ability of baselines, entitlement limits, and delimited boundaries, delineated under the existing framework, to retain their designated positions in the face of sea-level rise. Notably, resilience is not conceptualized as a binary quality but one that exists on a spectrum. While baselines and entitlement limits are capable of withstanding some of the effects of sea-level rise, carrying a degree of resilience, their ability to retain their designated form is limited. The resilience they offer is finite. Identifying the boundaries of their

resilience, and those of the LOSC framework, constitutes an integral part of this thesis. The Chapters of the thesis study discrete components of the legal framework for the oceans, assessing their individual resilience to the projected impacts of sea-level rise. The conclusion then addresses the resilience of the legal framework as a whole, offering a complete picture on the extent to which it may be applied to preserve the current spatial division of jurisdiction at sea.

## II. Scope and Limitations

There is much work to be done on climate change within the field of public international law. Understandably, this thesis cannot do it all. The focus here is on the impact of a specific consequence of climate change, sea-level rise, on a specific legal framework, the law governing baselines, entitlement limits and maritime boundaries. Climate change may carry several other effects on the ocean, including ocean acidification, pollution, altered water currents, and diminished biodiversity.[25] Each of these effects may, in themselves, warrant a revision of certain rules within the legal framework for the oceans, such as more stringent provisions on fishing and on conservation of the environment. However, their impacts will not be studied here. Equally, sea-level rise will impact several other legal frameworks. The forced migration it produces will need to be accounted for within international refugee law.[26] The inundation of territory it causes may require a reexamination of the criteria for statehood.[27] The study of these issues is a vital task of pressing urgency. Yet, it cannot be accommodated here. Only the impact of sea-level rise on the law of entitlements and delimitation will be directly addressed. Nor will this thesis make any general claims regarding the adaptability of international law to the threats posed by climate change, though it will employ rules from the law of treaties that have a bearing

[25] IPCC (n 8).

[26] McAdam (n 16).

[27] Camprubi (n 18); ILA (n 18).

on such adaptability, such as those on subsequent state practice, on systemic integration and on termination due to a fundamental change of circumstances.[28] The analysis and conclusions presented in the Chapters that follow are directed only at the law of maritime entitlements and delimitation.

Within the law of maritime entitlements and delimitation, there are two further qualifications to the scope of this thesis. First, while the law of the sea subsists in both customary international law and the LOSC, it is only the latter that constitutes the focus of this thesis. The LOSC is a widely-ratified instrument with 168 parties.[29] An overwhelming majority of coastal states are bound by the rules in this treaty.[30] There is also a high degree of parity between the LOSC and customary international law, as many provisions in the instrument have codified, crystallised or progressively developed custom.[31] Therefore, by focusing only on LOSC provisions, this thesis can still provide conclusions that are of practical benefit to the greatest number of states. While potential convergences and divergences between the customary rule and LOSC provisions will be briefly identified where relevant, the customary rules on entitlements and delimitation will not be studied separately by this thesis.

Second, since the central claim of this thesis is that the applicability of the existing legal framework for entitlements and delimitation to the challenges of sea-level rise is understudied, it is necessary to demonstrate the depth to which LOSC provisions ought to be analysed to uncover their application to situations of sea-level rise. Often, this requires a detailed survey of state practice, preparatory work and jurisprudence. Predictably, then, not all LOSC

[28] These rules are described in greater detail below, in the section on methodology.

[29] See: United Nations Treaty Collection, 'Parties to the United Nations Convention on the Law of the Sea' <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXI/XXI-6.en.pdf>.

[30] Also see the discussion in Chapter 5 on certain non-parties that apply the rules in Article 76 LOSC even though the provision does not have customary status.

[31] Qatar v. Bahrain 91-103; Nicaragua v. Colombia (2012) 666; Alleged Violations of Sovereign Rights 29, 83; Tanaka, *The International Law of the Sea* (3rd edn, 2019) 7-12.

provisions that are relevant in the context of sea-level rise can be studied by the thesis, for this would require a significant dilution in the attention offered to each. The thesis opts to analyse those provisions that are of the greatest relevance to coastal states threatened by sea-level rise. It identifies these to be the provisions on normal baselines, straight baselines, coastal fortification, continental shelves, and maritime delimitation. While many other provisions within the LOSC may warrant separate study, the space permitted to this thesis does not allow for their detailed examination. Instead, they will be identified in the conclusion to the thesis as opportunities for further research. The study of resilience offered by this thesis is not exhaustive and will, no doubt, be enriched by future work on these provisions.

## III. Methodology

This thesis employs a doctrinal approach. It interprets LOSC provisions in their application to situations of sea-level rise by employing the crucible approach to treaty interpretation set out in Articles 31-33 of the Vienna Convention on the Law of Treaties ('VCLT').[32] Although 61 of the LOSC's 168 parties are not parties to the VCLT,[33] they remain bound by the rules prescribed in Articles 31-33 due to their customary status,[34] permitting the application of these rules in this thesis. According to the crucible approach, a legally relevant treaty interpretation is produced through the interaction of various elements, set out in Articles 31-33, as though they were thrown together into a crucible and mixed.[35] This approach rejects any hierarchy in

[32] Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331, with 116 parties.

[33] See: Parties to the LOSC (n 29); United Nations Treaty Collection, 'Parties to the Vienna Convention on the Law of Treaties' <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XX III/XXIII-1.en.pdf>.

[34] Advisory Opinion on Activities in the Area 20; Avena 48; Equatorial Guinea v. France 19; Nicaragua v. Colombia (2016) 116; Qatar v. UAE 24.

[35] ILC, Draft Articles on the Law of Treaties with commentaries (1966) ILC Yearbook 219-220; Fitzmaurice & Merkouris, 'Canons of Treaty Interpretation' in Fitzmaurice & Okowa (eds), *Treaty Interpretation and the Vienna Convention on the Law of Treaties: 30 Years on*' (2010) 220; Gardiner, *Treaty Interpretation* (2nd edn., 2017) 10; Çalı, 'Specialized Rules of Treaty Interpretation' in Hollis (ed.), *The Oxford Guide to Treaties* (2nd edn., 2020) 507.

the elements set out in the general rule of treaty interpretation, codified by Article 31 VCLT.[36] As such, each element in this provision, described below, will be considered at par with the others. However, to ensure uniformity in structure, the order in which each element will be considered by the thesis will match the order in which they appear in Articles 31-33.

The interpretation of LOSC provisions will commence by considering the ordinary meaning of the terms employed in the treaty text.[37] Usually, this will occur by outlining their dictionary definitions.[38] Particular attention will be paid to dictionaries specifically directed to the field under consideration,[39] including public international law dictionaries and hydrographic dictionaries. The next step considered in the interpretive exercise will be the context of the treaty provision. Here, particular focus will be accorded to other provisions of the LOSC, as well as to the preamble and annexes of the treaty,[40] since the manner in which a term or phrase is used across the treaty is ordinarily presumed to be identical.[41] However, it must be acknowledged that the LOSC was negotiated without a prior draft from the ILC, on a 'package deal' approach with a consensus-based decision-making procedure.[42] Many provisions of the LOSC, including those considered by this thesis, were drafted through the use of informal negotiating groups.[43] A consequence of this procedure was that the text of the draft Convention was difficult to perfect (to the extent any treaty text can be so) and, as a result,

[36] Ibid.

[37] Article 31(1) VCLT.

[38] Aegean Sea Continental Shelf 21; Avena 48; Kasikili/Sedudu 1064; Linderfalk, *On the Interpretation of Treaties* (2007) 182; Merkouris, 'Interpretive Use of Travaux Préparatoires' in Fitzmaurice & Okowa (n 35) 88; Thirlway, *The Law and Procedure of the International Court of Justice* (2013) 1244; Gardiner (n 35) 186.

[39] Kasikili/Sedudu 1064; Thirlway (n 38) 1244; Linderfalk (n 38) 375; Gardiner (n 35) 187.

[40] Article 31(1) & (2) VCLT. See also: ILC Commentary (n 35) 221; Linderfalk (n 38) 103; Gardiner (n 35) 197.

[41] Rhine Chlorides Arbitration 36; Linderfalk (n 38) 105; Gardiner (n 35) 209.

[42] Harrison, *Making the Law of the Sea* (2011) 46.

[43] Ibid.

inconsistencies in language and structure persist in the treaty.[44] Indeed, Oxman notes '[i]t cannot be assumed that the use of different words in such a huge Convention drafted and negotiated by so many different people in disparate groups over many years, necessarily represents an intentional decision to convey a different meaning'.[45] Therefore, though arguments based on the treaty's language and structure will be made in the Chapters that follow, their weight ought to be adjudged keeping these factors in mind.

Next, the thesis will consider how the interpretation advanced accords with the object and purpose of the LOSC.[46] Frequently this will be derived from the preamble to the treaty, as well as inferred from the object and purpose of particular provisions of the treaty.[47] Here, the thesis will also consider the principle of 'ut res magis valeat quam pereat' (also described as the principle of effectiveness), an aspect of both the object and purpose of a treaty and of good faith interpretation.[48] This principle mandates that every provision be construed in a fashion that renders it effective, such that 'a reason and meaning can be attributed to every part of the text'.[49]

The thesis will then proceed to examine, where available, the subsequent practice of parties in the application of the LOSC, employed to demonstrate their shared agreement regarding its interpretation.[50] Much of this practice will be derived from the United Nations

[44] Noyes, 'Memorialising UNCLOS III, Interpreting the Law of the Sea Convention, and the Virginia Commentary' in Lodge and Nordquist (eds), *Peaceful Order in the World's Oceans* (2014) 218, 234.

[45] Oxman, 'The Duty to Respect Generally Accepted International Standards' 24 NYU JIL&P (1991) 109, 132.

[46] Article 31(1) VCLT.

[47] Avena 48; US-Shrimp 42; Belgium v. Senegal 449; Whaling in the Antarctic 251; Somalia v. Kenya (2017) 29-30; Qatar v. UAE 27-8; ILC Commentary (n 35) 221; Linderfalk (n 38) 204; Thirlway (n 38) 1262; Gardiner (n 35) 211, 220-221; Hollis, 'Treaty Clauses and Instruments' in Hollis (n 35) 647-8.

[48] Corfu Channel 24; Free Zones of Upper Savoy 13; Japan – Taxes on Alcoholic Beverages 12; Aegean Sea Continental Shelf 22; Libya/Chad 25; Fitzmaurice, 'The Law and Procedure of the International Court of Justice 1951-4' 33 BYIL (1957) 203; ILC Commentary (n 35) 219; Linderfalk (n 38) 118-20; Thirlway (n 38) 1263; Gardiner (n 35) 179.

[49] Ibid.

[50] Article 31(3)(b) VCLT.

Division for Ocean Affairs and the Law of the Sea ('DOALOS') database,[51] which provides a comprehensive account of all deposits of charts and lists of geographical coordinates by coastal states pursuant to the LOSC's publicity requirements, and of their national legislation on maritime entitlements and delimitation. Notably, while each survey of state practice will attempt to be as exhaustive as possible, it is not necessary that every state party to the LOSC participate in the relevant practice for it be considered an authentic source of interpretation under Article 31(3)(b).[52] The weight accorded to practice supporting a particular interpretation will, however, vary by the extent to which it is repeated.[53]

Next, the thesis will consider other relevant rules of international law applicable in the relations between the parties.[54] In particular, it will consider general principles of international law,[55] such as the principle of stability of boundaries[56] and the land dominates the sea principle,[57] to examine how the interpretation forwarded by the thesis accords with their substance. It will also consider the terms of other treaties, in particular widely-ratified multilateral treaties on climate change such as the UN Framework Convention on Climate

[51] DOALOS, Deposit of Charts and Lists of Coordinates <https://www.un.org/Depts/los/LEGISLATIONANDTREATIES/depositpublicity.htm>.

[52] Linderfalk (n 38) 167; Thirlway (n 38) 1271-2; Gardiner (n 35) 256; ILC, 'Draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties, with commentaries' (2018) ILC Yearbook Vol. II, Part 2, 79.

[53] Linderfalk (n 33) 167; Thirlway (n 33) 1271-2; Gardiner (n 30) 256; ILC (n 47) 74.

[54] Article 31(3)(c) VCLT.

[55] Article 31(3)(c) uses the phrase 'any relevant rules of international law' which has been interpreted to include general principles of international law: Georges Pinson v. Mexico 422; Golder v. United Kingdom ¶35; Furundžija ¶275; Banković ¶57; Villiger, *Customary International Law and Treaties* (1985) 268; McLachlan, 'The Principle of Systemic Integration and Article 31(3)(c) of the Vienna Convention' 54(2) ICLQ (2005) 279, 290; ILC, Report on Fragmentation of International Law A/CN.4/L.682 (2006) 215. The topic of general principles has recently been included by the ILC in its programme of work. The ILC aims to provide 'an authoritative clarification on their nature, scope and functions, as well as on the way in which they are to be identified': 2017 Recommendation of the Working Group on the long-term programme of work <https://legal.un.org/ilc/reports/2017/english/annex.pdf>.

[56] Grisbådarna 6; Beagle Channel 88-89; Rann of Kutch 149-150; Dubai/Sharjah 578; Burkina Faso/Mali 565; Libya/Chad 37; Aegean Sea Continental Shelf 35-6; Guinea-Bissau v. Senegal 36-7.

[57] Gulf of Maine 312; Jia, 'The Principle of the Domination of the Land over the Sea' (2014) 57 GYIL 63.

Change ('UNFCCC')[58] and the Paris Agreement, applying the principle of systemic integration to examine how the interpretation of LOSC provisions advanced corresponds with their terms. There are, however, two schools of thought on the use of treaties within the principle of systemic integration, and the meaning of the word 'parties' in Article 31(3)(c) VCLT. One school construes this term narrowly, to imply all parties to the treaty under interpretation, requiring all such parties to also be members of the relevant treaty sought to be introduced in the interpretive exercise.[59] Understandably, this significantly narrows the scope of relevant treaties that may be employed to interpret another. The second school interprets the term 'parties' liberally, to imply the parties to a dispute, only requiring those states that are contesting a particular interpretation to be members of the relevant treaty sought to be applied in the interpretive exercise.[60] This school allows for a wider consideration of other relevant treaties. Both approaches have received academic support and there are arguments in favour of and against each. Equally, international jurisprudence is also not partial to one particular approach, with some decisions adopting the narrow construction[61] while others advance the more liberal approach.[62] Examining which of these approaches is correct lies outside the scope of this thesis. The thesis adopts the liberal construction of the term 'parties' since this enables reference to a wider range of multilateral treaties on climate change. However, all arguments

[58] United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107, with 197 parties.

[59] McLachlan (n 55) 314-5; Linderfalk (n 38) 178; Young, 'The WTO's Use of Relevant Rules of International Law' 56(4) ICLQ (2007) 907, 914; van Damme, *Treaty Interpretation by the WTO Appellate Body* (2009) 372.

[60] Marceau, 'WTO Dispute Settlement and Human Rights' 13 EJIL (2002) 753, 782; French, 'Treaty Interpretation and the Incorporation of Extraneous Legal Rules' (2006) 55(2) ICLQ 281, 307; Gardiner (n 35) 303-4; Merkouris, *Article 31(3)(c) and the Principle of Systemic Integration* (2015) 47; Dörr, 'Article 31' in Dörr and Schmalenbach (eds), *Vienna Convention on the Law of Treaties: A Commentary* (2nd edn, 2018) 610-11.

[61] See, for instance: EC-Biotech Products 333-335; Vattenfall v. Germany 49.

[62] Iron Rhine Arbitration 66; Mutual Assistance in Criminal Matters 219; US-Shrimp 48-50; EC-Large Civil Aircraft 362.

advanced in relation to such treaties must be understood to be qualified by the contested nature of the approach adopted.

It may also be asked whether the rules provided in these widely-ratified multilateral treaties on climate change are 'relevant' for the interpretation of LOSC provisions, as required by Article 31(3)(c) VCLT. Gardiner notes that in order to be relevant for the interpretation of a treaty provision, a rule must either touch on the same subject matter or must be capable of affecting the interpretation of that provision in any manner.[63] McLachlan observes that the question of relevance is one of weight and not exclusion, noting that the importance given to an external rule in the interpretive process will vary based on its 'greater or lesser relevance' but no rule is automatically excluded from consideration in this process for being irrelevant.[64] Merkouris, defining relevance as 'subject-matter proximity', considers it a scale rather than a binary quality, such that the greater the proximity, the more chances that the treaty should be considered in an interpretive exercise.[65] Indeed, in Mutual Assistance in Criminal Matters, the International Court of Justice ('ICJ') noted that rules in an external treaty are relevant even when 'they are formulated in a broad and general manner, having an aspirational character' and they do 'not provide specific operational guidance as to the practical application of the Convention'.[66] In the Iron Rhine Arbitration, rules of international environmental law were considered relevant for the interpretation of treaties concerning the separation of territories, construction of railway lines and provision of transit rights between Belgium and the Netherlands.[67] In US-Shrimp, rules of international environmental law were considered

[63] Gardiner (n 35) 299.

[64] McLachlan (n 55) 310.

[65] Merkouris (n 60) 89.

[66] Mutual Assistance in Criminal Matters 219.

[67] Iron Rhine Arbitration 66.

relevant for the interpretation of a treaty on trade law.[68] Therefore, treaties on climate change that impact the interpretation of LOSC provisions in the context of sea-level rise are 'relevant' for the purposes of Article 31(3)(c) VCLT and can be employed in this interpretive exercise in the manner described above.

Having considered other relevant rules of international law, the thesis will examine the preparatory work of the LOSC, one of the supplementary means of interpretation that may be employed to either confirm the interpretation arrived at through the previous elements of the interpretive exercise, or to help guide this exercise when the interpretation produced by Article 31 is ambiguous, obscure, manifestly absurd or unreasonable.[69] Here, particular attention will be paid to the Virginia Commentary on the Third United Nations Conference on the Law of the Sea ('UNCLOS').[70] This Commentary was prepared using formal and informal documentation employed in the Conference, coupled with the personal knowledge of the principal negotiators at the Conference as well as of UN personnel who participated in it.[71] Since the LOSC does not possess an official legislative history, the Virginia Commentary is considered the most comprehensive account of its preparatory work.[72] In addition, the thesis will also consider the deliberations at the 1930 Hague Conference for the Codification of International Law and the discussions of the ILC in preparation for UNCLOS I. Although not part of the drafting effort for the LOSC, these sources can be employed whilst interpreting its provisions, since material contributing to an identical or similar provision in a predecessor

[68] US – Shrimp 48-50

[69] Article 32 VCLT. See, generally: Gardiner (n 35) 347.

[70] Nandan & Rosenne (eds), *United Nations Convention on the Law of the Sea, 1982: A Commentary* (1993).

[71] Ibid xli.

[72] See, for instance, the discussions on historical background in: Proelss (ed), *United Nations Convention on the Law of the Sea: A Commentary* (2017). The thesis will also refer to the Proelss commentary, which complements the Virginia Commentary, while assessing the preparatory work of the LOSC.

treaty (here, the 1958 Geneva Conventions addressing the territorial sea and the continental shelf)[73] is considered part of the preparatory work of its successor.[74]

Finally, the thesis will consider the different language versions of the LOSC, each of which is equally authoritative.[75] The terms of a treaty are presumed to carry the same meaning in each authentic text.[76] Where there appears to be an inconsistency in meaning across the different language versions of a provision under consideration, the thesis will resolve it using the interpretive process in Articles 31-32 VCLT, described above.[77] If this process does not resolve the inconsistency, the meaning 'which best reconciles the texts, having regard to the object and purpose of the treaty' will be forwarded as the correct interpretation of the relevant provision.[78] The thesis relies on secondary sources to identify inconsistencies in meaning across authentic texts since the author cannot independently translate and identify such inconsistencies. Although the thesis will attempt to compare every language version of the LOSC, this may not always be possible due to a dearth of scholarship that considers each version. Nonetheless, inconsistency between even two authentic texts is sufficient to resort to Article 33(4) VCLT, to reconcile their meanings.[79]

While the tools described above will be employed by the thesis to arrive at its own interpretation of LOSC provisions, the thesis will, of course, also engage with the interpretations and arguments advanced by others. In particular, each Chapter will undertake a

[73] Convention on the Territorial Sea and Contiguous Zone (adopted 29 April 1958, entered into force 10 September 1964) 516 UNTS 205, with 52 parties; Convention on the Continental Shelf (adopted 29 April 1958, entered into force 10 June 1964) 499 UNTS 311, with 58 parties.

[74] Serbia v. Canada 468-69; LaGrand 504; Nicaragua v. Honduras 744; Romania v. Ukraine 106-7; Avena 49; Tunisia/Libya 45; Gardiner (n 35) 398.

[75] Article 320 LOSC.

[76] Article 33(3) VCLT.

[77] Article 33(4) VCLT.

[78] Article 33(4) VCLT.

[79] LaGrand 502; ILC (n 35) 225; Gardiner (n 35) 414.

thorough review of scholarship and jurisprudence relevant to the issue under consideration, summarising and critically appraising the positions adopted. While the impact of sea-level rise on maritime entitlements and delimitation has been the subject of much academic writing, it is yet to be analysed as a discrete issue in international jurisprudence. The only consideration afforded to it has been brief and tangential, in delimitation decisions, while considering coastal instability at basepoints.[80] The analysis offered by these decisions will be considered in conjunction with that afforded by scholarship to situate the interpretation of LOSC provisions advanced by this thesis within a wider body of rich literature and gradually-maturing jurisprudence.

The law here is as stated at 7 July 2022. All website links provided were last accessed on 7 July 2022. All treaty participation identified is also as of 7 July 2022.

## IV. Chapter Outline

Chapter 1 frames the problem that the thesis seeks to address in greater detail. After offering a brief overview of scientific literature on sea-level rise, summarising changes in coastal features that are predicted for the coming century, the Chapter outlines why such geographic changes unsettle the current framework for jurisdiction at sea. The Chapter then critically appraises existing scholarship on the impact of sea-level rise on the law of entitlements and delimitation. It demonstrates that such scholarship carries an undue focus on adaptation, arguing for a new stable framework without fully deliberating measures available within the existing law to address the impact of sea-level rise. This neglect of resilience is identified as a gap in the literature that is to be addressed through the Chapters that follow.

[80] See, for instance: Guyana v. Suriname 128; Nicaragua v. Colombia (2012) 641-4; Nicaragua v. Honduras 743; Ghana/Côte d'Ivoire 76; Bay of Bengal Arbitration 58-74; Qatar v. Bahrain 99.

Chapter 2 examines the normative content of the 'low-water line', the normal baseline as per Article 5 LOSC. After outlining the debate in scholarship on whether this phrase refers to a charted line or chart datum, the Chapter argues in favor of the former interpretation. Nonetheless, the Chapter demonstrates that the answer to this debate does not determine whether the normal baseline is ambulatory, as is oft presumed by those who participate in it. It is shown that the charted baseline is also subject to ambulation. Instead, the question of whether the low-water line refers to a charted line or chart datum is disclosed to be relevant only for the manner in which ambulation occurs. While the datum line ambulates freely, in untethered fashion, the movements of the charted line are relatively stable, offering the coastal state some degree of control. The Chapter concludes by studying how this degree of control should be utilised by threatened coastal states, outlining methods that could be employed while charting the normal baseline to render it more resilient in the face of sea-level rise.

Chapter 3 studies the use of straight baselines, as an alternative to the ambulating normal baseline, to better preserve the spatial stability of maritime entitlements for coastal states threatened by sea-level rise. After demonstrating that straight baselines offer enhanced resilience, the Chapter considers whether coastal instability produced by sea-level rise is sufficient for their construction under Article 7(2) LOSC. It demonstrates that Article 7(2) is not subordinate to Article 7(1), and can be used independently for the construction of straight baselines. It further argues that the application of Article 7(2) is not restricted to coastal instability produced at the mouth of river deltas. The Chapter concludes by outlining the limits to the utility offered by straight baselines, detailing the situations in which their efficacy breaks down.

Chapter 4 examines the use of coastal fortification measures to stabilise the baseline, in situations where the tools studied in Chapters 2 and 3 reach their breaking point. The Chapter justifies why fortification measures that stabilise basepoints are permitted legal effect, arguing

that they fall within the meaning of 'permanent harbour works' in Article 11 LOSC. The narrow construction of Article 11 by the ICJ in the Black Sea case is disputed. After offering a detailed doctrinal justification for their use within the law of the sea, the Chapter concludes by considering the limits that circumscribe their application to preserve maritime entitlements.

Chapter 5 addresses the resilience of a specific entitlement limit, the continental shelf. This Chapter assesses the legal justification for the permanence of the continental shelf limit irrespective of baseline ambulation. Unpacking the normative content of Article 76 LOSC, the Chapter argues that there are two routes to obtain a fixed continental shelf limit. The first, found within Article 76(8), is an accelerated route to permanence through engagement with the Commission on the Limits of the Continental Shelf ('CLCS'). The meaning of the phrase 'final and binding' contained in this article is explored, and the claim that this expression only addresses the coastal state is addressed. The Chapter then explores the second route to permanence, found in Article 76(9), responding to the claim that it is only applicable to limits that lie beyond 200 nautical miles from the baseline. The meaning of the phrase 'natural prolongation', used in Article 76(1), is studied to justify why the permanence described by Article 76(9) is applicable to all continental shelf limits. Finally, the Chapter demonstrates that the permanence of the continental shelf limit provided for in Article 76 is finite, explaining why it cannot survive all degrees of sea-level rise.

Chapter 6 considers the special case of delimited boundaries. Demonstrating that, unlike entitlement limits, such boundaries are not subject to ambulation due to baseline retreat, the Chapter considers whether their opposability can be questioned in situations of sea-level rise. While some scholars believe this to be possible, on the grounds of a 'fundamental change of circumstances', the Chapter demonstrates that termination cannot impact delimited boundaries since they constitute executed treaty provisions. It further argues that, in any event, maritime delimitation treaties are exempt from termination on this ground under Article

62(2)(a) VCLT. Next, the Chapter addresses the claim that maritime boundaries could be challenged using the pacta tertiis rule in situations where sea-level rise produces third-party rights within the areas subject to delimitation. It discloses why this possibility contradicts the principle of stability of boundaries. Finally, the Chapter considers the case of adjudicated boundaries, examining whether their stability is subject to separate considerations. Uncovering significant resilience for delimited boundaries, the Chapter concludes by describing them as a promising tool to counter the impact of sea-level rise.

The conclusion summarises the findings of each Chapter on the legal basis for the application of the specified LOSC provisions to situations of sea-level rise. It then provides a detailed plan of action that a coastal state could employ, through the combined application of these LOSC provisions, to defer the legal effects of sea-level rise on its entitlement limits and maritime boundaries.

# Chapter 1

# Framing the Problem

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## Introduction

It has been hypothesized that sea-level rise carries tremendous potential to disrupt the law of maritime entitlements and delimitation.[81] Several states, including Australia, Fiji, Kiribati, Marshall Islands, Micronesia, New Zealand, and Tuvalu, have advocated for a change in the rules on maritime jurisdiction to enable them to weather the legal consequences of sea-level rise.[82] Some, such as Kiribati, Maldives, Marshall Islands, and Tuvalu, have engaged in a large scale re-drawing of their baselines and entitlement limits to better withstand the impact of a changing climate.[83] Others, such as Indonesia, Japan, Malaysia, Philippines, Tonga, and Vietnam, have invested hefty sums in fortifying their islands to defer these impacts.[84] The academic consensus also appears to be that, without a significant revision of the rules in the Law of the Sea Convention, legal and economic uncertainty will beleaguer state and non-state

[81] See, for instance: Soons (n 19); Freestone & Pethick (n 19); Schofield (n 19); Caron (n 19); Hayashi (n 19).

[82] Pacific Islands Forum, Submission to the ILC on the Sub-Topics of Sea-level Rise (2021).

[83] See, for a compilation of such practice: ILA (n 18) 17. The ILA Report identifies such practice by analysing amendments to domestic legislation undertaken by each state.

[84] Symmons, 'Some Problems Relating to the Definition of 'Insular Formations' in International Law: Islands and Low-Tide Elevations' 1(5) IBRU Maritime Briefing (1995) 2-3; Schofield, 'Rising Waters, Shrinking States: The Potential Impacts of Sea Level Rise on Claims to Maritime Jurisdiction' 53 GYIL (2011) 189.

actors that operate in the oceans.[85] As Caron observes, in addition to natural hazards, climate change carries the capacity to produce legal hazards that 'do not alter the amount of climate change, but instead aggravate the suffering that will accompany such change'.[86] It is imperative, therefore, that alongside efforts to check the natural hazards of climate change, we also strive to mitigate the legal uncertainties it will produce.

This Chapter seeks to better understand why sea-level rise threatens the existing framework for the law of the sea, and to examine proposals to address its legal impacts. The Chapter begins with the scientific predictions for geographic change to the shoreline in coming years, explaining how the coast and its features will be affected by sea-level rise [**I**]. Next, the Chapter analyses how these predicted changes will impact the rules governing entitlements and delimitation, clarifying why the spatial configuration of maritime zones is intrinsically connected with the locus and shape of the shoreline [**II**]. Finally, it critically examines scholarship on sea-level rise and the law of the sea, seeking to understand the current academic approach towards this issue [**III**]. Through this exercise, the Chapter aims to outline the gaps in the literature on this subject, framing issues that will be addressed by the Chapters that follow.

## I. Sea-level Rise

In 2019, the Intergovernmental Panel on Climate Change concluded it is 'virtually certain that the global ocean has warmed unabated since 1970 and has taken up more than 90% of the excess heat in the climate system'.[87] As a consequence of such warming, the Panel noted that

[85] See, for instance: Soons (n 19); Freestone & Pethick (n 19); Schofield (n 19); Caron (n 19); Hayashi (n 19); ILA (n 18).

[86] Caron, 'When Law Makes Climate Change Worse: Rethinking the Law of Baselines in Light of a Rising Sea Level' 17(4) Ecology Law Quarterly (1990) 621, 623.

[87] IPCC, *Special Report on the Ocean and Cryosphere in a Changing Climate – Summary for Policymakers* (2019) 9.

the global mean sea level is rising, and that the rate at which it is rising is accelerating.[88] While the oceans rose at a rate of 1.4mm per year between 1901-1990, they rose at 3.6mm per year in 2006-2015.[89] More alarming, however, are the projections for future sea-level rise. The Panel recorded that, by the end of this century, global mean sea level would rise by 0.59m in a (highly-unlikely) low-emissions scenario, but by 1.10m in a high-emissions scenario.[90] A graphical representation of the projections can be found in Appendix I. While these numbers might seem small, they carry the potential to wipe out the entire territory of small-island states such as Tuvalu, Kiribati, the Marshall Islands and the Maldives.[91] Similarly, global mean sea-level rise of 1m is sufficient to submerge significant portions of low-lying coastal states including Bangladesh, Guyana and China.[92] Estimates suggest that the total area under threat of submersion due to these predictions is five million square km, or about 3 percent of all landmass on the planet.[93] It is also worth noting that the IPCC's methodology is considered conservative by many in the scientific community.[94]

While ocean thermal expansion triggered by climate change will be a significant contributor to projected sea-level rise, the dominant drivers are estimated to be ice loss from the Greenland and Antarctic ice sheets, as well as from glacier depletion.[95] However, the Panel recorded that its estimates of ice sheet loss may be significantly underrated, noting that there

[88] IPCC (n 87) 10.

[89] Ibid.

[90] Ibid 20.

[91] IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (2022) 15-14.

[92] Ibid 4-76, 12-108,

[93] Caron (n 86) 627-8.

[94] See, for instance: Pérez, 'Statistical Language Backs Conservatism in Climate-Change Assessments' 69(3) BioScience (2019) 209; Janzwood, 'Confident, likely, or both? The implementation of the uncertainty language framework in IPCC special reports' 162 Climatic Change 1655 (2020); van der Geest & van den Berg, 'Slow-onset events: a review of the evidence from the IPCC Special Reports' 50 Current Opinion in Environmental Sustainability (2021) 109.

[95] IPCC (n 87) 10.

exists '[u]ncertainty related to the onset of ice sheet instability aris[ing] from limited observations, inadequate model representation of ice sheet processes, and limited understanding of the complex interactions between the atmosphere, ocean and the ice sheet'.[96] It noted that these processes could increase the contribution of the ice sheets to sea-level rise by values 'substantially higher' than those currently predicted for the end of the century.[97] Considering that the Antarctic ice sheets, alone, carry the capacity to cause global mean sea level rise of several metres if lost in entirety,[98] the uncertainty on the cryosphere's contribution to sea-level rise in coming years is a cause of deep concern.

However, the threat of sea-level rise extends far beyond ocean thermal expansion and the loss of the cryosphere. There are a variety of other factors that will accelerate coastal retreat and an expansion of the oceans due to climate change. As the oceans rise, they will exacerbate wave heights which, in turn, will contribute to increased flooding and coastal erosion.[99] This has already been observed in the Southern and North Atlantic Oceans, and in the Arctic.[100] Stronger coastal winds are also projected, which are damaging to the shoreline.[101] With an intensification of regional water cycles, it is also expected that there will be an increase in precipitation, evapotranspiration from the soil and river discharge, all of which carry the potential of coastal degradation.[102] Evidence indicates that climate change will trigger an increase in both the frequency and intensity of tropical cyclones, storm surges, floods and extreme weather events, all of which are erosive to coastal features.[103] As the Panel notes,

[96] Ibid.

[97] Ibid 20.

[98] Ibid 10.

[99] Ibid 11.

[100] Ibid.

[101] Ibid.

[102] Ibid 21.

[103] Ibid.

'[e]xtreme sea level events that are historically rare (once per century in the recent past) are projected to occur frequently (at least once per year) at many locations by 2050 in all RCP scenarios'.[104] This suggests that sea-level rise will not be a gradual and uniform process, occurring in a predictable fashion and only revealing its impacts over a long period of time. Rather, the experience of sea-level rise and coastal retreat will often occur in sudden and unpredictable spurts, triggered by extreme climatic events.

Moreover, climate change will also damage natural barriers to coastal erosion, such as mangroves and coral reefs, which can reduce the resilience of the shoreline and make it more vulnerable to the threats described above.[105] Under a low-emissions scenario, 90% of the ocean's reef-building corals will be eliminated.[106] Under a high-emissions scenario, this number stands at 99%.[107] Increased salinization of coastal soil, which is predicted to occur with sea-level rise, also renders the shore more vulnerable to the threat of erosion.[108] This implies that, in addition to ocean thermal expansion, cryosphere loss and coastal erosion caused by extreme weather events, the effects of sea-level rise will also be enhanced by the parallel loss of the natural resilience of the coast.

Finally, as the IPCC noted in 2022, these '[c]limate change impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions'.[109] This suggests that the threat posed by each of the risks outlined above is not discrete and independent. Nor can

[104] Ibid 20.

[105] Ibid 13, 24

[106] IPCC, *Special Report on Global Warming of 1.5 °C – Summary for Policymakers* (2018) 10.

[107] Ibid.

[108] IPCC (n 87) 25.

[109] IPCC (n 8) 20.

their damage be projected through the simple arithmetic exercise of addition. Rather, the risks posed by ocean thermal expansion, ice sheet loss, increasingly intensifying cyclones and winds, larger waves, more damaging storm surges and a loss of natural barriers will interact with one another to produce a gestalt of coastal damage that is greater than the sum of its parts. Their effects will be compounded.

The impacts described above, while seemingly calamitous, will not be experienced uniformly across the globe. The Panel notes that the vulnerability of different coasts and ecosystems varies substantially both amongst and within different regions of the planet. Variations in land ice loss and ocean warming can produce regional differences of ±30% in comparison to the projected rise in global mean sea levels.[110] Indeed, as noted by the Panel in the Fifth Assessment Report, '[s]ince 1993, the regional rates for the Western Pacific are up to three times larger than the global mean, while those for much of the Eastern Pacific are near zero or negative'.[111] The maximum degree of sea-level rise is currently observed 'in the western Pacific, the central Indian Oceans, south of Greenland, and south of ~40°S in the Indian and Atlantic basins' whereas the eastern Pacific and the western North Atlantic oceans are relatively protected from such impacts.[112] In fact, there will be certain areas that may not experience any relative rise in sea-levels due to a parallel vertical movement in the landmass, caused by groundwater extraction, tectonic activity and post-glacial rebound triggered by the removal of the weight of ice sheets from a landmass.[113] On the other hand, low-lying coastal states and small island states will suffer a disproportionate amount of the effects of sea-level

[110] Ibid 10.

[111] IPCC, *Synthesis Report for the Fifth Assessment Cycle* (2015) 42.

[112] Carr et al, 'Sea Level Rise in a Changing Climate: What Do We Know?' in Gerrard & Wannier (eds), *Threatened Island Nations* (2013) 15, 25.

[113] Ibid 16.

rise described above.[114] While certain states face a complete inundation of their territory due to sea-level rise, there might well be others than experience an expansion of their territory during the same time period. The experience of sea-level rise will be far from equal.

In conclusion, there are four crucial features of sea-level rise that ought to be kept in mind whilst proceeding to the discussion on maritime entitlements. First, it is accelerating at unprecedented rates, with projections suggesting that global mean sea level rise might exceed 1 metre by the end of the century. Second, sea-level rise extends beyond gradual ocean thermal expansion to include several other impacts that will be triggered by climate change. In particular, it covers sudden and unpredictable surges in relative ocean levels caused by losses from the cryosphere and coastal erosion triggered by extreme weather events. Third, the interaction of these different risks are complex and cascading, indicating that current predictions cannot accurately describe the complete extent of sea-level rise and coastal degradation likely to occur in coming years. Fourth, the effects described above will not be experienced uniformly by the international community. While some states will be shielded from these impacts, others will suffer disproportionately.

## II. Coastal Change and the Law of the Sea

The law of the sea subsists in both customary international law and convention.[115] Its rules have been codified, crystallised and progressively developed by the widely-ratified LOSC. Under these rules, the oceans are carved up into zones of jurisdiction which are allocated to coastal states. These include the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf. Within each zone, a coastal state is only entitled to exercise

[114] IPCC (n 8) 11-12.

[115] Tanaka (n 31) 7-12.

specific rights and jurisdiction as defined by the LOSC and by customary international law. Crucially, the spatial configuration of these zones depends on their distance from the shoreline.

To understand the impact of sea-level rise on maritime entitlements, it is necessary to understand a central feature of the law of the sea: the baseline. The breadth of the territorial sea extends to a distance 'not exceeding 12 nautical miles, measured from baselines'.[116] The contiguous zone of a state abuts the territorial sea, but 'may not extend beyond 24 nautical miles from the baselines'.[117] Likewise, the exclusive economic zone 'shall not extend beyond 200 nautical miles from the baselines'.[118] The continental shelf also extends 'to a distance of 200 nautical miles from the baselines', though in certain circumstances it may protrude even further.[119]

What, then, is the baseline? Article 5 LOSC defines the normal baseline as 'the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State'. While the meaning of these terms is contested,[120] and will be subject to detailed discussion in the next Chapter, it is sufficient to point out that the normal baseline hinges on the location of the shore. Consequently, it is postulated that sea-level rise renders the normal baseline ambulatory.[121] This means that when sea-level rise triggers a retreat of the interface between land and sea, this causes the normal baseline as defined in Article 5 to move backwards in order to match this geographic change. In certain cases, a baseline can also be constructed

[116] Article 3 LOSC.

[117] Article 33(2) LOSC.

[118] Article 57 LOSC.

[119] Article 76(1) LOSC.

[120] See, for instance: Kapoor & Kerr, *A Guide to Maritime Boundary Delimitation* (1988) 31; Beazley, 'Technical Considerations in Maritime Boundary Delimitations' in Charney & Alexander (eds), *International Maritime Boundaries* (1993) 243; Reed, *Shore and Sea Boundaries Vol. III* (2000) 179; ILA Committee on Baselines, Sofia Report (2012) 57; Purcell, *Geographical Change and the Law of the Sea* (2019) 161.

[121] Soons (n 19); Freestone & Pethick (n 19); Schofield (n 19); Caron (n 19); Hayashi (n 19); ILA (n 18).

through the use of geometric lines that do not follow the contours of the coast but are merely tethered to it at the endpoints.[122] Although sea-level rise may not trigger continuous ambulation for such baselines, in comparison to normal baselines, it can still cause such straight and archipelagic baselines to retreat by submerging the two points at which they make contact with the coast. As a result, the limits of each maritime entitlement which are defined by reference to the baseline (whether normal, straight or archipelagic) also shift landward. However, changes to the spatial configuration of maritime entitlements can be triggered by more than just a gradual retreat of the shoreline.

Under certain circumstances, baselines can be drawn by employing low-tide elevations.[123] Low-tide elevations are naturally formed areas of land which are surrounded by and above water at low-tide but submerged at high tide.[124] However, if the elevation were to become permanently submerged due to a rising sea, it could no longer serve as part of the normal baseline. This would cause the baseline to leap backward to the coast, or to another feature permitted to serve on the baseline, rather than retreat gradually. Similarly, where an island is situated on an atoll or possesses a fringing reef, the seaward low-water mark of the reef can be employed as part of the normal baseline.[125] However, much like a low-tide elevation, if such reef were to be permanently submerged as a consequence of sea-level rise, eliminating its low-water mark, it could no longer be employed by the coastal state on the baseline, prompting such baseline to jump back. A similar sudden retreat in the baseline can also occur where a coastal state employs permanent harbour works that protrude out of the coast as part of the baseline.[126] The inundation of such works would shift the baseline back to

[122] Article 7 & 47 LOSC.

[123] See: Article 7(4), 13(1) & 47(4) LOSC.

[124] Article 13(1) LOSC.

[125] Article 6 LOSC.

[126] Article 11 LOSC.

the closest point of land that remains above water at low-tide. In each of these scenarios, sea-level rise carries the potential to prompt a sudden and significant retreat of the baseline and of entitlement limits.

In addition to a retreat in baselines and entitlement limits, sea-level rise also carries the potential to completely eliminate a coastal state's claim to certain maritime entitlements. A coastal state is entitled to claim a territorial sea from a rock, i.e. an island 'which cannot sustain human habitation or economic life of [its] own'.[127] However, in order to claim the status of a rock, the feature must be above water at high tide. If sea-level rise caused the feature in question to become submerged at high-tide, it would be downgraded to a low-tide elevation from which no claim to a territorial sea is permitted. As a result, the portion of the coastal state's territorial sea generated by the erstwhile rock would be entirely eliminated. Equally, where an island can support human habitation or an economic life of its own, it generates a territorial sea, exclusive economic zone and a continental shelf for the coastal state.[128] However, if sea-level rise were to cause the island to lose this capacity for human habitation or economic life, for instance through saltwater intrusion into the island's freshwater supplies, it would be downgraded to a rock and the continental shelf and exclusive economic zone it generates would be eliminated. Moreover, if the island were to become submerged at high-tide, it would be further downgraded to a low-tide elevation, prompting the coastal state to also lose its claim to the territorial sea generated by the feature. Finally, it has also been argued that the complete submersion of the territory of a state could be grounds for a loss of statehood.[129] This would necessarily eliminate all claims to maritime entitlements that the former state possessed. Although this argument is

[127] Article 121(2) & (3) LOSC.

[128] Ibid.

[129] Camprubí (n 18) 78.

contested,[130] and examining the loss of statehood lies outside the scope of this thesis, it is worth noting that this is one of the possible legal impacts of sea-level rise.

Finally, in addition to its impact on baselines and entitlement limits, sea-level rise also carries the potential to disrupt another feature of the law of the sea: maritime boundaries established through delimitation. The LOSC and customary international law recognize that coastal states possess entitlements up to certain distances from the shore. Nonetheless, due to the geographical proximity of coastal states, there are often scenarios where one state's entitlement overlaps with that of another. In such a situation, to avoid disputes and foster legal certainty, it is necessary to establish a boundary between the entitlements of both states that clearly demarcates the sovereign rights and jurisdiction possessed by each.[131] This process is called delimitation. The delimitation of maritime boundaries is a task that can be conducted by coastal states on their own, through treaties, or by adjudication.[132] Crucially, much like entitlement limits, boundaries established through delimitation are also often drawn by employing points on the baseline. Unlike entitlement limits, however, boundaries are not considered ambulatory.[133] Rather, their location is presumed to be fixed once they are delimited irrespective of changes to the coast. However, it has been argued that significant changes to the coastline may be grounds to invalidate the treaty through which the boundary was established on the grounds of a 'fundamental change of circumstances'.[134] Similarly, it has also been argued that in scenarios where coastal retreat is of a sufficient scale to eliminate the

[130] See, for instance: McAdam, *Climate Change, Forced Migration and International Law* (2012); ILA (n 18) 22.

[131] Churchill, Lowe & Sander, *The Law of the Sea* (4th edn, 2022) 300.

[132] Ibid 303.

[133] See: Aegean Sea Continental Shelf 35-6; Bay of Bengal Arbitration 62-63; Soons (n 19); Schofield (n 84); Lisztwan, 'Stability of Maritime Boundary Agreements' 37 Yale Journal of International Law (2012) 153; Busch, 'Sea Level Rise and Shifting Maritime Limits' 9 Arctic Review on Law and Politics (2018) 174; ILA (n 18); Purcell (n 120) 145; Aurescu & Oral (n 21) 49; Árnadóttir, *Climate Change and Maritime Boundaries: Legal Consequences of Sea Level Rise* (2021) 221.

[134] Soons (n 19) 228; Freestone & Pethick (n 19) 77; Busch (n 133) 179; ILA (n 18) 24; Aurescu & Oral (n 21) 45.

overlap of entitlements between the coastal states that established the boundary, thereby creating third party rights within the area subject to delimitation, the boundary established by the coastal states is no longer opposable to third states.[135] These arguments will be considered in greater depth in the final Chapter of this thesis. For now, however, it is vital to note that sea-level rise is also capable of disrupting established maritime boundaries across the globe, rendering their validity uncertain.

At this point, one might well question why these changes are significant. Even if sea-level rise does cause some movement to the lines of jurisdiction drawn in the oceans, why is this problem sufficiently important to warrant a detailed re-examination of the LOSC's provisions? Rather than simply discussing this point in abstract terms, by outlining the impact of sea-level rise on entitlements and delimitation, it might be worthwhile to ponder the practical effect these changes may have on various stakeholders. For the coastal state, a whittling of entitlements has significant economic repercussions. A shrinking of the EEZ would take away the state's sovereign right to explore and exploit, conserve and manage the natural resources found in those waters.[136] This would deprive it of exclusive rights to exploit the fisheries in the area lost, to regulate and tax the bunkering of fishing vessels, or to use the waters in question to generate renewable energy.[137] Similarly, the loss of an area of the continental shelf could entail the loss of access to vast reserves of heavy minerals, including chromium, titanium, tin and zirconium, precious metals such as gold and silver, diamond deposits, valuable seafloor fisheries, including those of pearl oysters, crabs, clams, and scallops, as well as hydrocarbon deposits in the form of petroleum and natural gas.[138] For small island states whose economy

[135] Lisztwan (n 133) 192; Árnadóttir (n 133) 203.

[136] Article 56 LOSC.

[137] Tanaka (n 31) 157.

[138] Rothwell & Stephens, *The International Law of the Sea* (2nd ed. 2016) 106.

depends heavily on access to these resources, the consequences of losing their exclusive economic zone or continental shelf, in whole or in part, could be devastating. At the same time, however, it is important to note that third states may stand to gain what the coastal state loses. When the baseline retreats, an area that previously fell within a coastal state's EEZ would now be subject to the freedom of the high seas, permitting all states to make use of the fisheries within it. Similarly, the loss of an area of the continental shelf would transform it into the Area, subject to the regime of the common heritage of mankind.[139] On the other hand, if the undelimited entitlement of the coastal state in question overlaps with that of another coastal state, it will be the latter state that will acquire the rights that are lost due to an ambulation of the baseline rather than the international community in general.

The impact of ambulatory baselines also extends to the question of jurisdiction. The coastal state is granted prescriptive and enforcement jurisdiction only over specific activities in each maritime zone. A shifting of entitlement limits, therefore, renders uncertain the jurisdiction that third parties are subject to and the rules they have to comply with. Within the territorial sea, for instance, the vessels of third states are subject to the rules on innocent passage as prescribed in Articles 17 et seq. However, if the waters in question were to become part of the EEZ, third parties would be entitled to the freedom of navigation they possess on the high seas (subject to the rights of the coastal state in the EEZ).[140] In the former case, for instance, the vessel would have to comply with the coastal state's laws on safety of navigation, including sea lanes and traffic separation schemes, or may be subject to special precautionary measures if it is nuclear-powered or is carrying dangerous or noxious substances.[141] These restrictions

[139] Under this regime, the resources of the Area are not subject to appropriation by any State or person. Instead, rights over such resources are vested in mankind as a whole. The Authority is empowered to act on behalf of mankind, and any resources recovered from the Area can only be alienated in accordance with Part XI of the LOSC. See: Articles 136 & 137 LOSC.

[140] Article 58(1) LOSC.

[141] Articles 22-23 LOSC.

would not be applicable if the vessel were traversing the exclusive economic zone. Similarly, the transformation of an area of EEZ or continental shelf into the high seas or the Area may invalidate the licenses granted to non-state actors to carry out fishing or offshore oil exploration, undermining investments they may have already undertaken to obtain and exercise such rights. When entitlement limits are subject to fluctuation, therefore, they create significant legal and economic uncertainty for both states and non-state actors that employ the waters in question. It is this very uncertainty that the law of the sea seeks to eliminate by establishing 'a legal order for the seas and oceans which will …promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment'.[142] Sea-level rise threatens the very foundation of the spatial division of the oceans and carries the potential to unsettle carefully-constructed rules on rights and jurisdiction at sea established through decades of work. It is imperative, therefore, that academic effort be channelled towards preventing or mitigating this hazard as far as possible. The next section will critically examine proposals that seek to address this issue.

## III. Appraising the Scholarship

The IPCC published its First Assessment Report on Climate Change in 1990.[143] In the same year, scholarship began contemplating the impact of sea-level rise on maritime entitlements. Soons, who wrote one of the first articles on this issue, offered a compelling outline of LOSC provisions that could play a role in countering the effects of sea-level rise.[144] He argued that, while sea-level rise may endanger the stability of the EEZ and territorial sea, the continental shelf limit is fixed permanently by virtue of Article 76(9). Soons further noted that Article 7(2)

[142] ¶4, Preamble to the LOSC.

[143] IPCC (n 87).

[144] Soons (n 19).

offers the coastal state an opportunity to draw straight baselines at unstable coasts, and to maintain these baselines notwithstanding a regression of the coastline, thereby mitigating the effects of sea-level rise. He recognized the utility of artificially conserving the coast to preserve the location of the baseline, acknowledging however that the costs involved in this endeavour may be prohibitive for several states. He further concluded that sea-level rise will not affect delimited boundaries since treaties establishing boundaries are exempt from termination due to a fundamental change of circumstances. While these observations were perceptive, and continue to define the conversation on sea-level rise and maritime entitlements today, Soons acknowledged that his article aimed to do no more than provide 'a general overview of some of the problems involved and their possible solutions'.[145] As he graciously recognized, 'the issues will have to be studied in much more detail in the years to come'.[146] Soons, who wrote this article without the benefit of other scholarly opinion to inform his own, could not have foreseen the debate on the nature of the baseline as a charted line or chart datum. Yet, this debate is crucial for establishing the ambulatory nature of the baseline and for understanding when and how it is subject to fluctuation. Similarly, Soons did not have the opportunity to address critiques that one might raise against the uses of the provisions he discusses. It is necessary, for instance, to establish whether an unstable coastline is sufficient to draw a straight baseline under Article 7(2) LOSC, or whether the conditions described in Article 7(1) must also be satisfied. The latter reading would significantly diminish the utility of this provision as a tool to counter sea-level rise. Similarly, while Article 76(9) does mention a permanent continental shelf limit, it remains unclear whether this provision applies to the limit drawn to 200 nm in addition to the one drawn beyond. This question requires further analysis that Soons, understandably, could not have offered at such an early stage. Moreover, while treaties

[145] Ibid 232.

[146] Ibid.

establishing boundaries are exempt from the fundamental change of circumstances rule, it is unclear whether this applies solely to territorial boundaries. Each of these questions requires detailed examination.

Finally, it is worth noting that Soons concluded his study of LOSC provisions by noting that one potential option to counter the threat of sea-level rise would be 'the creation of a new rule of customary international law which allows coastal States in case of sea level rise to maintain the original outer limits of their maritime zones'.[147] However, he observed that this option was 'less dependable' since it required the approval of third states, which may not be forthcoming.[148] The creation of a new rule to fix maritime limits has gained much traction in subsequent writing. Unfortunately, such writing often fails to carry the same pragmatism on the viability of this option that Soons demonstrated.

Caron, who also wrote a similarly prescient piece in 1990, was the first to offer a justification for the ambulatory nature of baselines.[149] He argued, through negative implication, that wherever the LOSC wishes to establish a fixed limit or baseline it makes this explicit, highlighting the text of Article 7(2) and 76(9). Scholars who contest the ambulatory character of baselines have found it difficult to overcome the hurdles presented by Caron's reasoning.[150] Indeed, this thesis relies heavily on his arguments in Chapter 2 to demonstrate why the LOSC requires a revision of baselines to match geographic change. Caron's piece continues to have

[147] Ibid 231.

[148] Ibid. Soons elaborates on this position in subsequent writing, noting that the option of developing new rules to tackle the issue of sea-level rise 'offer little prospects for success, in particular because intergovernmental negotiations on these sea level rise issues may not remain isolated and could trigger the inclusion of other, more controversial, (law of the sea) issues. It is therefore better to look at informal ways: developing the application and interpretation of the current LOSC provisions in practice…': Soons, 'The Effects of Sea Level Rise on Baselines and Outer Limits of Maritime Zones' in Heidar (ed), *New Knowledge and Changing Circumstances in the Law of the Sea* (2020) 358, 374.

[149] Caron (n 86).

[150] See, for instance: Purcell (n 120).

an impact on scholarship pertaining to this issue more than three decades after it was written. When it came to solutions, however, Caron believed there to be only one viable option under existing law to preserve the stability of entitlements: artificial conservation of the baseline. Concerned that this would require significant wasteful expenditure, with vital resources being spent in preserving uninhabited specks of rock in the ocean, he thought it best to 'freeze the boundaries of…maritime zones on the basis of presently accepted baselines' by establishing a new rule of customary international law.[151] Like Soons, Caron did not have the benefit of prior scholarship to add more detail to his analysis, causing him to overlook other tools to stabilise jurisdiction at sea, such as the use of vertical datum calculations, of straight baselines on unstable coasts, or of maritime delimitation.[152] This may have been why he estimated that the only viable solution to counter the threat of sea-level rise lay in lex ferenda.

For two decades after Soons' and Caron's initial articles on this subject, the topic of sea-level rise and maritime entitlements appears to have not received much attention in the scholarship.[153] Then, abruptly, it witnessed a flurry of writing commencing in 2010. Despite the significant time period that had lapsed, there was little advancement in the legal analysis presented in such new writing. Schofield, for instance, echoes Caron's argument that the only viable option under existing law to counter sea-level rise is the adoption of a 'bulkhead policy', i.e. the use of artificially engineered structures to hold the baseline in place.[154] He goes further than Caron, however, and proposes the use of land reclamation to extend the baseline,

[151] Caron (n 86) 641.

[152] Although Caron does acknowledge these options in subsequent writing, noting that they may offer some promise in tackling the issues posed by sea-level rise, he considers them insufficient and reiterates that only a new rule of customary international law would constitute a satisfactory solution: Caron (n 19).

[153] With the exception of pieces by Freestone & Pethick and Judge Jesus, that echoed Caron's proposal to freeze baselines and entitlement limits through a new rule of international law: Freestone & Pethick (n 19); Jesus, 'Rocks, New-born Islands, Sea-level Rise and Maritime Space' in Frowein et al (eds), *Verhandeln für den Frieden-Negotiating for Peace* (2003) 602.

[154] Schofield (n 84) 215.

presuming that this, too, is legally tenable in the same manner as coastal fortification is.[155] Chapter 4 will analyse the question of land reclamation in greater depth, explaining why the artificial extension of a natural feature is distinct from its artificial preservation, arguing that only the latter category can be employed to prevent the retreat of baselines. Moreover, like Soons, Schofield contemplates the use of straight baselines under Article 7(2) LOSC to stabilise the spatial configuration of entitlements. Although he does appreciate the legal hurdles in this exercise, observing that 'the existence of the word "and" between "delta" and "other natural conditions" appears to indicate that this provision is restricted to the unusual situation of an unstable delta',[156] he does not address how a coastal state could overcome such hurdles. Ultimately, he too considers the options available under existing law to be inadequate, arguing that the 'preferable approach' would be to freeze baselines and entitlement limits by adopting a new multilateral agreement that would be supplementary to the LOSC.[157] Unfortunately, Schofield does not directly address how international political consensus could be generated for the adoption of this new agreement.

Rayfuse, who published an article in the same year as Schofield, begins her analysis by briefly detailing the options available to coastal states under existing law to counter the impact of sea-level rise.[158] She contemplates the use of straight baselines under Article 7(2), the permanent establishment of continental shelf limits, and the use of maritime delimitation. However, she concludes that the approaches available under existing law had 'limited application', arguing that the 'most workable' option would be to adopt a supplementary agreement to the LOSC to freeze baselines in place.[159] Like Schofield, however, she too does

[155] Ibid 218.

[156] Ibid 223.

[157] Ibid 230.

[158] Rayfuse, 'International Law and Disappearing States' 52 UNSW Law Research Paper Series (2010).

[159] Ibid 5, 7.

not address why states would agree to this new rule. Indeed, the trend described here extends far beyond Schofield and Rayfuse.

Lusthaus, without fully addressing the tools available within the LOSC to stabilise the fluctuation of maritime limits, concludes that 'the best means to address the problem of uncertain boundaries is to adopt a system that freezes existing ambulatory maritime boundaries'.[160]

Stoutenburg notes the finality of the continental shelf limit, without fully considering to whom such finality is opposable and whether it extends to all continental shelf limits.[161] She acknowledges the option of using artificial means to preserve the baseline, but notes that such 'protection strategies entail the danger of the protected island being reclassified as an artificial island under the law of the sea', thereby dismissing their utility.[162] She argues for the inviolability of maritime delimitation agreements by referencing the boundary-treaty exception to the fundamental change of circumstances rule, but does not scrutinise whether maritime boundaries fall within this exception. Concluding that the measures available under existing law are insufficient, she argues that 'the most obvious way' to counter the threat of ambulatory baselines would be 'to insert a new rule into the LOSC providing for stable maritime zones'.[163]

In identical fashion, Hayashi briefly considers the use of straight baselines, the establishment of outer limits for the continental shelf and delimitation to be the only tools available within existing law that could be employed to counter sea-level rise.[164] Other tools such as the use of vertical datum calculations and artificial preservation are overlooked.

[160] Lusthaus, 'Shifting Sands: Sea Level Rise, Maritime Boundaries and Inter-state Conflict' 30(2) Politics (2010) 113, 117.

[161] Stoutenburg, 'Implementing a New Regime of Stable Maritime Zones' 26 IJMCL (2011) 263.

[162] Ibid 278.

[163] Ibid 289.

[164] Hayashi (n 19) 187.

Moreover, even for the tools analysed, only brief doctrinal justification is offered for their use. Hayashi does not address why straight baselines may be drawn at unstable coasts, which continental shelf limits are to be considered permanent, and why maritime boundaries fall within the ambit of the boundary-treaty exception to the rule on fundamental change of circumstances. He concludes that '[t]he options under existing law of the sea regime for avoiding or mitigating adverse effects of sea-level rise, as discussed above, are quite limited'.[165] Instead, he notes that 'the only general legal solution to the problems involved lies in the creation of new rules of international law', proposing the freezing of baselines and entitlement limits through a new multilateral instrument.[166]

Freestone, writing with Schofield, acknowledges that existing law does offer promise, noting for instance that a 'broader application' of the LOSC's provisions on straight baselines may permit a stabilization of entitlements.[167] However, he does not address any other tools that could be employed for this purpose, nor does he offer further analysis on Article 7 and its application in the context of sea-level rise. Instead, he focuses on what he considers 'the most promising methods', the fixing of entitlement limits and baselines through a new rule of custom.[168]

Sefrioui notes the 'absence of [a] response of the provisions of the United Nations Convention for the Law of the Sea [to the threat of sea-level rise] even though it is the "Constitution of the Oceans"' without fully contemplating the tools available within the LOSC

[165] Ibid 194.

[166] Ibid.

[167] Schofield & Freestone, 'Options to Protect Coastlines and Secure Maritime Jurisdictional Claims in the Face of Global Sea Level Rise' in Gerrard & Wannier (n 112) 141, 159.

[168] Ibid 162.

to mitigate this threat.[169] Instead, she considers the freezing of baselines and entitlement limits to be the only 'efficient' solution to this problem.[170]

The ILA's Committee on International Law and Sea Level Rise, in its Sydney Report, believes the fixing of baselines and entitlement limits through a new rule of international law to be the only viable options to tackle the threat posed to entitlements and delimitation.[171] No options under existing law are directly addressed by the Committee.

The ILC's Study Group on Sea-level Rise, in its First Issues Paper, briefly considers the LOSC's provisions on straight baselines and continental shelf limits, noting that they are exceptions to the general ambulatory character of baselines and entitlement limits.[172] However, without further discussion on these and other relevant LOSC provisions, the Study Group concludes that these measures are insufficient to address the concerns posed by sea-level rise, noting that '[a]n approach responding adequately to these concerns is one based on the preservation of baselines and outer limits of the maritime zones'.[173] Although the ILC Study Group's work is at a preliminary stage, it also seems inclined to propose the freezing of maritime limits and baselines, in line with the scholarship reviewed above.

This focus on the need to fix entitlement limits and baselines through the creation of new rules, coupled with academic inattention for tools available within existing law to tackle the problems posed by sea-level rise, is troubling for three reasons. First, the scholarship outlined above rarely considers the practical feasibility of the proposed measures, implicitly presuming that international political consensus can be promptly catalysed to implement the

[169] Sefrioui, 'Adapting to Sea Level Rise: A Law of the Sea Perspective' in Andreone (ed), *The Future of the Law of the Sea* (2017) 3, 20.

[170] Ibid.

[171] ILA (n 18) 12.

[172] Aurescu & Oral (n 21) 29.

[173] Ibid 41.

fixing of limits and baselines once its merits are demonstrated. Yet, as demonstrated in Section I, the effects of sea-level rise are far from uniform. Indeed, while some states stand to lose vast swathes of land, others may even gain territory. Moreover, as argued in Section II, maritime jurisdiction is a zero-sum game. The entitlements lost by one state are gains for other states, since this enables them to access resources that fell within the exclusive domain of another. Consequently, several States may stand to benefit from the ambulation of baselines and have no compelling interest in agreeing to new rules. These include states with the capacity to conduct distant-water fishing, states that possess raised coastlines that are protected from sea-level rise, states neighbouring low-lying coastal states that are vulnerable to sea-level rise, and landlocked states.[174] Therefore, it is unclear whether the new rules proposed by current writing can be implemented. Academic focus on new rules runs the risk of leaving coastal states entirely high and dry (ironically) when it comes to real, actionable options they could use to preserve their entitlements in the present.

Second, even if the political consensus required to adopt these new rules were catalysed, it would take years for them to be implemented. Maritime entitlements have always held an integral nexus with coastal geography in the history of the law of the sea.[175] A protracted effort spanning decades was involved in generating consensus on the current spatial distribution of the oceans, as embodied in the LOSC.[176] The likelihood of agreement on new measures that alter the structure of this treaty, which attributes rights and duties to coastal states based on distance from land, thereby discarding the favoured 'land dominates the sea' principle,[177] within a short time-frame seems remote. The ongoing experience with biodiversity beyond

[174] Stoutenburg (n 161) 302.

[175] Weil, *The Law of Maritime Delimitation: Reflections* (1989) 50.

[176] See: Harrison (n 42).

[177] Romania v. Ukraine 89; Qatar v. Bahrain 97; Aegean Sea Continental Shelf 36; North Sea Continental Shelf 51.

national jurisdiction demonstrates that renegotiating fundamental aspects of the LOSC is a time-consuming task.[178] There are many pragmatic considerations that even a mere 'fixing' of baselines and limits would require. The source of law through which it would be implemented requires deliberation.[179] Whether such fixing would be solely of outer limits or of limits and baselines must be debated.[180] The precise moment from which limits and baselines are to be considered fixed is likely to be a sticking point.[181] Provisions will be needed that address existing disputes over maritime spaces.[182] Fresh surveys of coastlines may be required to ensure geographical accuracy at the time of freezing.[183] States that lack the financial capacity to do so on their own may require support for such surveys, for which provisions will have to be made.[184] We can therefore surmise that, despite recent attention tendered to this subject by bodies like the ILA[185] and ILC,[186] a new legal framework remains a distant dream. In the interim, coastal states will continue to suffer a loss of their maritime space and will need strategies and tools they can apply in the present to defer their legal losses and ensure their maritime claims live to see the promised future of a new framework for maritime entitlements. Scholarship must assist them in this endeavour.

Third, in order to know which rules under the existing framework require change, it is necessary to first understand which rules are resilient to the effects of sea-level rise and which are most vulnerable. As will be demonstrated in the Chapters that follow, there are scenarios

[178] Wright et al, 'The Long and Winding Road' (2018) IDDRI Studies No.8 40.

[179] Soons (n 19); Caron (n 86); Schofield & Freestone (n 167).

[180] ILA (n 18) 12.

[181] Hayashi (n 19) 197.

[182] Stoutenburg (n 161) 295.

[183] Ibid 292.

[184] Ibid.

[185] ILA (n 18).

[186] Aurescu & Oral (n 21).

where the existing rules do not require change, either because the boundary/limit in question is largely impervious to changes to the baseline or because there are effective measures the coastal state can undertake to stabilise it. It makes little sense to undertake an exercise in redrafting the rules on the law of the sea before their capacity to withstand the effects of sea-level rise has been understood in depth. For these reasons, it is imperative that academic effort be channelled towards examining measures that threatened coastal states may employ within the existing legal framework, to strategically apply, as far as possible, the law of entitlements and delimitation to bolster the resilience of their maritime claims. This is the gap in scholarship which this thesis will address through the Chapters that follow.

It is important to acknowledge, however, that there are exceptions to this general rule of academic oversight in relation to measures available within the existing legal framework. A few scholars have made important strides in identifying relevant tools within the LOSC that could help mitigate the effects of a retreating coast. Busch, for instance, appreciates the narrow probability of amending the LOSC framework in time for coastal states to mitigate the effects of sea-level rise.[187] Instead, she posits that a liberal interpretation of the LOSC's provisions is also capable of offering 'increased stability and juridical protection of the maritime entitlements'.[188] In particular, she focuses her attention on the use of straight baselines under Article 7(2) and the drawing of continental shelf outer limits through Article 76(9). Chapters 3 and 5 of this thesis seek to engage with and build on her crucial work. Likewise, Árnadóttir notes that '[i]t will be difficult to change existing rules', concluding that '[t]he proposed freezing of maritime limits may not be the most feasible way to secure maritime entitlements'.[189] Although much of her work is focused on maritime delimitation and the

[187] Busch (n 133).

[188] Ibid 187.

[189] Árnadóttir (n 133) 63.

fundamental change of circumstances rule, she also offers valuable insight on the use of the chart datum and artificial measures to stabilise the baseline. Her arguments are discussed briefly in Chapters 2 and 4, while Chapter 6 engages with her work in depth. Finally, perhaps the only author to argue that the existing legal framework is entirely self-sufficient to address the issue of sea-level rise, Purcell offers an intriguing interpretation of the LOSC's provisions to argue that the Convention does not provide for ambulatory baselines at all.[190] While she acknowledges that coastal states are free to revise their baselines in light of geographic change if they wish to, it is her position that there is no obligation to do so under the LOSC. Consequently, she believes that no changes are necessary for the current framework to tackle the threat of sea-level rise. Instead, baselines and maritime limits remain fixed in place, irrespective of coastal retreat, so long as the coastal state wishes them to. While compelling, her arguments overstate the efficacy of the LOSC in addressing the issue of sea-level rise. The following Chapter is dedicated to engaging with her position.

## Conclusion

This Chapter set out to explain why sea-level rise poses a risk to the stability of jurisdiction at sea. It began by describing changes to coastal geography that can be predicted for the coming years, relying on the reports of the IPCC. It was noted that, according to the IPCC's latest estimates, sea-level rise of up to 1.1m is predicted for the end of the century. This would be sufficient to wipe out entirely the territory of several small-island states, and to submerge significant portions of landmass for low-lying states. It was also identified that these estimates are considered conservative, noting the high degree of uncertainty that exists around ice sheet loss from the cryosphere. The Chapter further explained that several other factors would contribute to sea-level rise in a changing climate, including flooding, coastal erosion, increased

[190] Purcell (n 120).

precipitation, and a higher frequency and intensity of extreme weather events such as cyclones and storm surges. Moreover, climate change would also damage the innate resilience of the shore to sea-level rise by damaging natural barriers such as mangroves and coastal reefs, and through salinization that renders coastal soil more vulnerable to erosion. The increasing complexity concerning the interaction of these various factors was also identified, implying that they may compound to produce coastal damage that exceeds the sum of each discrete component. Finally, the relative nature of these impacts was recognized. The effects of sea-level rise and extreme weather events will not be uniform across the globe. Instead, they will be felt disproportionately by certain states while others go relatively unharmed.

The Chapter then proceeded to outline how these predicted changes would impact the current legal framework for jurisdiction at sea. The baseline as an approximation of the shore was explained, as was the idea of maritime entitlements as zones of jurisdiction at sea. Crucially, the role of the baseline in determining the spatial configuration of entitlements was discussed to describe why a retreat in the shoreline would whittle down the size of maritime entitlements. It was also noted that such movements in the baseline and entitlement limits could also occur through the submergence of low-tide elevations, fringing reefs and permanent harbour works. Moreover, the possibility of a complete elimination of certain entitlements was identified as a consequence of the inundation of rocks, the loss of insular status, or the potential loss of statehood due to a complete submergence of land territory. Finally, the potential of unsettling delimited boundaries was also recognized, noting that the opposability of such boundaries may be challenged due to an alteration of baselines. These changes to entitlement limits and delimited boundaries could be disastrous for coastal states whose economy depends on the resources available in such waters. It would also significantly interrupt the operation of non-state actors who ply vessels, carry out fishing operations or hold concessions for oil exploration in these waters. All in all, it was reasoned that sea-level rise threatens the very

foundation of the spatial division of the oceans and carries the potential to unsettle carefully constructed rules on rights and jurisdiction at sea established through decades of work.

The Chapter then examined how scholarship within the law of the sea addresses these impacts on maritime entitlements and delimitation. While this issue has been the subject of much attention, particularly since 2010, much of the writing on sea-level rise and maritime entitlements follows a predictable template. While some tools within the existing law are identified to mitigate the effects of sea-level rise, they tend to be dismissed after brief consideration and without a full explanation of the arguments that could be employed to justify their use. Instead, the freezing of baselines and entitlement limits is proposed, either through a new customary rule or through the adoption of a new multilateral instrument. In most scholarship, such freezing is believed to be the only viable solution to tackle the threat of sea-level rise. Three problems were identified with this focus on new rules coupled with neglect for existing tools within the law of the sea. First, it is unclear how political consensus can be generated to adopt new rules since several prominent states stand to gain from the impact of sea-level rise. Second, even if consensus were generated, it would be years before the new rules could be formulated and implemented. In the interim, coastal states would continue to suffer a loss of their maritime space. Third, even if existing rules are to be changed, this cannot occur until their resilience to sea-level rise is understood in depth. How else can one know which rules require change and which do not? Consequently, it was recognized that academic effort should be channelled towards examining measures that threatened coastal states may employ within the existing legal framework, to strategically apply, as far as possible, the law of entitlements and delimitation to bolster the resilience of their maritime claims. This is what the Chapters that follow propose to do.

# Chapter 2

# The Normal Baseline

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## Introduction

This Chapter scrutinises Article 5 of the LOSC, which defines the normal baseline. To study the significance of sea-level rise for maritime entitlements is to interrogate, first and foremost, its impact on the 'low-water line', the definitive core of the normal baseline in the modern law of the sea. However, the meaning of the term 'low-water line' is unclear and there has been much debate whether it implies a charted baseline or a tidal datum.[191] The Chapter commences

[191] The tidal datum for the low-water mark refers to the vertical plane of reference at which the low-tide intersects with the coastline. The following datums are widely used in nautical charts to define the low-water mark: Mean Lower Low Water (MLLW), the average height of the lower low waters over a specified period; Lowest Low Water Spring Tides (LLWST), the average of the lowest low water observations of spring tides, over a specified period; Mean Low Water Springs (MLWS), the average height of the low waters of spring tides over a specified period; Mean Low Water Neaps (MLWN), the average height of the low waters of neap tides over a specified period; Lowest Astronomical Tide (LAT), the lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions: Antunes, 'The Importance of the Tidal Datum in the Definition of Maritime Limits and Boundaries' 2(7) IBRU Maritime Briefing (2000) 5. See Appendix II, below, for a graphical representation of different low-tide datums. See Section III, below, for a detailed discussion on the calculation and impact of different low-tide datums.

by investigating whether Article 5 LOSC refers to the delineation of the low-water line in navigational charts or, instead, to the tidal datum through which such delineation occurs [**I**]. Arguing for the former, the Chapter demonstrates that those who participate in this debate implicitly presume that it holds the key to determining whether the normal baseline ambulates. Unravelling this belief, the Chapter explains that the question of ambulation is, in fact, independent of the charted line versus chart datum debate [**II**]. Establishing the existence of a free-standing obligation to revise baselines, the Chapter proceeds to interrogate how the debate on the 'low-water line' still holds significance for the fulfilment of this obligation. It argues that while both the charted line and the chart datum are capable of ambulating, the manner and timing of their ambulation differ. As a result, the charted baseline offers the coastal state a critical degree of control over the threat of ambulation. Finally, the Chapter explores techniques that could be used by coastal states while calculating their tidal datum to enhance the resilience of their maritime claims [**III**]. Through this exercise, the Chapter argues that a strategic use of the LOSC's provision on normal baselines could bolster the resilience of a coastal state's maritime claims. Although the analysis of this Chapter is directed at the text of Article 5 LOSC, this provision has been recognised to reflect customary international law.[192] As a result, the conclusions derived here are also of use to non-parties to the LOSC.

## I. The Low-Water Mark: Physical Fact or Charted Fiction?

Article 5 LOSC states that 'the normal baseline for measuring the breadth of the territorial sea is the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State'. The words 'as marked on' in the preceding sentence have proved to be the source of heated controversy in academic writing. One school of thought interprets them

[192] Qatar v. Bahrain 91, 97; Nicaragua v. Colombia (2012) 666; Alleged Violations of Sovereign Rights 29, 83; Trümpler, 'Article 5' in Proelss (n 72) 47; Lathrop, 'Baselines' in Rothwell et al (eds), *The Oxford Handbook of the Law of the Sea* (2015) 73-4; Tanaka (n 31) 54-55; Churchill, Lowe & Sander (n 131) 54-56. Also see: Anglo-Norwegian Fisheries 128.

literally, whereby the baseline is the low-water line as delineated on large-scale charts recognized by states.[193] Purcell submits, for instance, that:

> Art.5 does not pick out 'the low water line' as some non-cartographical matter of fact and require that it is 'marked on large-scale charts officially recognized by the coastal state'. It identifies the low-water line as the normal baseline in significant part because it is a linear representation of the 'coast' already marked on nautical charts.[194]

A second school interprets the disputed phrase as a reference to the tidal datum used in nautical charts.[195] For them, Article 5 posits that the normal baseline is the low-water line as calculated in large-scale charts recognized by a state. Adherents of this latter school include the ILA's Baselines Committee, which concluded in its Sofia Report:

> …that the legal normal baseline is the actual low-water line along the coast at the vertical datum, also known as the chart datum, indicated on charts officially recognized by the coastal State. The phrase "as marked on large-scale charts officially recognized by the coastal State" provides for coastal State discretion to choose the vertical datum at which that State measures and depicts its low-water line.[196]

This section will argue in favour of the first interpretation, that the normal baseline is the charted line, applying the crucible approach to treaty interpretation. The ordinary meaning of 'marked' in Article 5, the first step in this interpretive exercise,[197] lends greater support to the charted line school, since it appears to emphasise the visual depiction of the line rather than the method employed to calculate the depiction.[198] The dictionary definition of this term highlights its intrinsic connection with a visual expression.[199] The use of 'large-scale charts' in Article 5 further emphasises that the mark of the low-water line be visible, reinforcing the view that it is

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[193] Kapoor & Kerr (n 120) 31; Beazley (n 120) 243; Lathrop (n 192) 77; Tanaka (n 31) 55; Purcell (120) 161; Churchill, Lowe & Sander (n 131) 58-9.

[194] Purcell (n 120) 161.

[195] O'Connell, *The International Law of the Sea Vol. II* (1984) 682; Reed (n 120) 179; ILA (n 120) 57; Árnadóttir (n 133) 43-44.

[196] ILA (n 120) 47.

[197] Article 31(1) VCLT.

[198] Churchill, Lowe & Sander (n 131) 58.

[199] "Marked, adj. and n." in OED Online (n 3).

the charted line, and not the datum through which it was calculated, that constitutes the baseline. This is reinforced by Articles 16, 47, 75 and 85 LOSC, part of the context to be taken into account whilst interpreting Article 5.[200] Each of these provisions require lines to 'be shown on charts of a scale or scales adequate for ascertaining their position'. Thus, all other references to a chart in the LOSC prioritise the visual depiction of a specified line on the chart, not the method of calculation employed to arrive at this depiction. It must be presumed that the reference to charts in Article 5 carries the same connotation.[201]

Further, as Churchill, Lowe and Sander argue, reading Article 5 as a reference to the tidal datum rather than the charted line contradicts the ut res principle, an aspect of the object and purpose of a treaty and of good faith interpretation,[202] by rendering the provision less effective:

> Those who in practice will most want to know the location of the baseline are foreign mariners and fishers and the coastal State's law enforcement officials…[t]he only way that foreign mariners and fishers can discover the location of the low-water line, and hence the baseline, is by consulting a chart. They cannot be expected to know where the low-water line is actually located if it is different from the line shown on the officially recognised chart.[203]

Moreover, as Tanaka observes, 'it would be unpractical to require coastal states to provide real-time notification of changing baselines'.[204] Indeed, if the normal baseline were dependant on the tidal datum rather than its charted delineation, it would be constantly fluctuating and

[200] Article 31(1) & (2) VCLT. See also: ILC (n 35) 221; Linderfalk (n 38) 103; Gardiner (n 35) 197.

[201] Rhine Chlorides Arbitration 36; Linderfalk (n 38) 105; Gardiner (n 35) 209.

[202] Corfu Channel 24; Free Zones of Upper Savoy 13; Japan – Taxes on Alcoholic Beverages 12; Aegean Sea Continental Shelf 22; Libya/Chad 25; Fitzmaurice (n 48) 203; ILC (n 35) 219; Linderfalk (n 38) 118-20; Thirlway (n 38) 1263; Gardiner (n 35) 179.

[203] Churchill, Lowe & Sander (n 131) 58.

[204] Tanaka (n 31) 55.

susceptible to challenge at any given point for the slightest inconsistency, undermining the LOSC's objective of a stable legal order for the oceans.[205]

Unfortunately, there is no clear subsequent practice that might assist in unearthing the meaning of Article 5.[206] Most states declare their baselines by listing coordinates on a chart.[207] Whether they believe such coordinates to determine the baseline or merely illustrate it remains a mystery. Even more confounding, the Chinese and Russian versions of this text appear to emphasize the charted line as the baseline, while the French and Spanish ones consider it only illustrative.[208] Each version is, of course, equally authoritative,[209] and is presumed to have the same meaning.[210] As both schools of thought agree,[211] a recourse to the preparatory work of this provision is warranted to resolve its ambiguity[212] and to reconcile the different meanings in the authentic texts.[213] The interpretation of such preparatory work, however, proves to be equally divisive.

The genealogy of Article 5 may be traced to the 1930 Hague Conference for the Codification of International Law,[214] where the definition of the baseline was first sought to be

[205] ¶4, Preamble to the LOSC. Although the charted baseline also ambulates, it will be shown in Section II E below that it does so in a more controlled fashion.

[206] Article 31(3)(b) VCLT.

[207] See: DOALOS, *Baselines: National Legislation with Illustrative Maps* (1989).

[208] ILA (n 120) 16; Trümpler (n 192) 52. The interpretation of the Arabic version of the LOSC has not received attention in academic literature, yet an inconsistency between even two versions of the authentic texts is considered sufficient to trigger a resort to Art.33(4) VCLT and, through this, to the preparatory work of a treaty. See: LaGrand 502; Gardiner (n 35) 414.

[209] Article 320 LOSC.

[210] Article 33(3) VCLT.

[211] See, for instance: ILA (n 120) 9-12; Purcell (n 120) 166-173.

[212] Article 32(a) VCLT.

[213] Article 33(4) VCLT.

[214] Although not part of the drafting effort for the LOSC, the Hague Conference can be considered whilst interpreting Article 5 since material contributing to an identical or similar provision in a predecessor treaty (here, Article 3 of the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone) is considered part of the preparatory work of its successor. See: Serbia v. Canada 468-69; LaGrand 504; Gardiner (n 35) 398.

brought into uniformity.[215] In order to draw up bases of discussion for the Conference, the Preparatory Committee sought written responses from participating states on their definition of the baseline.[216] It is striking that, in most such responses, states appear to be at pains to establish which tidal datum ought to constitute the low-water mark for baselines.[217] This even prompted the Preparatory Committee to note that '…various replies call attention to the different meanings which can be given to the expression 'low water''.[218] Indeed, as the German response articulates:

> It should be noted, in the first place, that different methods are employed in the existing marine charts of the various States to fix the "spring-tide low-water level", which corresponds to the "low water mark". A number of other criteria are also adopted by the various countries to determine the base line, e.g., "mean water", the "line of mean low-water spring tides", the "spring-tide low water line during the equinoxes", the "low water level" and the "mean sea level". According to existing German law, *the criteria adopted in German marine charts* are, for the Baltic, the "mean sea level", and for the North Sea, the "line of mean low-water springs" [emphasis added].[219]

Conceding that achieving homogeneity in datum calculations for the low-water mark would prove difficult, the German response goes on to propose that:

> …the base line to be adopted in the Convention on Territorial Waters should be the *"sea level adopted in the charts"* of the coastal State, which may be based on any of the above mentioned criteria according the configuration of the various coasts and the geodesic principles applied by the State in question [emphasis added].[220]

As would be evident, the reference to charts at this point was not to signal the definitive status of the low-water marks etched on their surface but only to allude to the 'criteria', or tidal datum, employed by states to calculate such marks. This is mirrored in the United States'

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[215] O'Connell (n 195).

[216] Rosenne (ed), *League of Nations Conference for the Codification of International Law Vol. II* (1975) 253.

[217] South Africa, Germany, Australia, Great Britain, India, New Zealand and Poland all asserted that the line of low-water at the mean low-water springs datum constituted the baseline. Finland, too, noted that since the '[l]ow water level varies considerably…in different parts of the world' it was necessary that 'a definite decision should be reached as to which low-water mark should be adopted as the baseline': Ibid.

[218] Ibid.

[219] Ibid.

[220] Ibid.

Proposal on Basis of Discussion No. 6 during the proceedings of the Territorial Sea Committee at the Conference, which urged that the baseline be set 'at whatever line of sea level is adopted in the charts of the coastal state'.[221] It is, quite clearly, the 'line of sea level', i.e. the vertical datum, which constitutes the conclusive factor in this scheme; the reference to charts, here, only suggests the discretion provided to coastal states in choosing this datum. These proposals culminated in Draft Article 14, prepared by the Second Sub-Committee, which stipulated that:

> Subject to the provisions regarding bays and islands, the breadth of the territorial sea is measured from the line of low-water mark along the entire coast.
>
> For the purposes of this Convention, the line of low-water mark is that indicated on the charts officially used by the coastal state, provided the latter line does not appreciably depart from the line of mean low-water spring tides.[222]

Unlike its counterpart in the LOSC, this provision opts for the weaker phrase 'as indicated on', supporting the conclusion that the reference to the low-water mark was a reference to the tidal datum, and that the chart was merely indicative of the former. That the Article uses a tidal datum, of 'mean low-water spring tides', to curtail coastal discretion in the choice of the low-water mark further demonstrates the Committee's belief that the datum defined the baseline, not the demarcated line. When combined with the emphasis accorded to datum choices in the initial written responses and subsequent proposals submitted to Committee, it may be concluded that, at the Hague Conference, the reference to the low-water mark was a reference to tidal datum.[223]

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[221] Rosenne (ed), *League of Nations Conference for the Codification of International Law Vol. IV* (1975) 195.

[222] Ibid Annex IV.

[223] Even though the draft articles weren't ultimately adopted by the Territorial Sea Committee, this was only because of an inability to arrive at a consensus on the breadth of the territorial sea. Nevertheless, these articles were appended to the Final Report of the Committee, which acknowledged their importance in developing the law of the territorial sea: Ibid 1411, 1419-1423.

Nonetheless, this reference experienced a subtle yet perceptible shift in meaning when it was taken up for discussion by the ILC in preparation for UNCLOS I.[224] This is unmistakeable in the preliminary discussion on Draft Article 14, in which members seemed overly concerned about the ability of interested parties to discern the visual depiction of the low-water line on charts.[225] In fact, Hudson questioned the resort to this provision altogether, arguing that its use was inapposite since 'official charts…frequently omitted to show the low-water mark properly'.[226] Lauterpacht echoed this sentiment, asking that the Special Rapporteur ensure the maps used to mark the low-water line are of a sufficient scale to detect its location.[227] When the Draft Article underwent revision, the requirement that the line be marked on 'large-scale charts' was introduced for this very reason.[228] As Trümpler discerns, the addition of this phrase strongly indicates that the ILC understood the low-water line to be a charted line; a large-scale chart is only necessary to ascertain the precise position of the marked line yet superfluous to gleaning the tidal datum used.[229]

Moreover, in scenarios where the low-water mark was found to be inaccurate, members concurred that it would be the chart and not the datum that would be susceptible to challenge. Amado observed that 'the proviso should be deleted, since; if the low-water mark in official charts departed appreciably from the line of mean low-water spring tides, those charts would not be accurate and their validity would be questioned by any legal tribunal'.[230] Similarly,

[224] Discussions, reports and draft articles of the ILC that are subsequently employed in formulating a treaty are considered a part of such treaty's preparatory works. In fact, the ICJ has expressly used discussions of the ILC to interpret the Territorial Sea Convention and, through it, the LOSC: Nicaragua v. Honduras 744; Romania v. Ukraine 106-7. See also: Avena 49; Tunisia/Libya 45; Gardiner (n 35) 349.

[225] ILC Yearbook Vol. I (1952) 171-174.

[226] Ibid 173.

[227] Ibid.

[228] François, *Third Report on the Regime of the Territorial Sea* A/CN.4/77 (1954) 3.

[229] Trümpler (n 192) 54.

[230] ILC Yearbook (n 225) 172.

Spiropoulos noted 'that if the line drawn on an official chart differed to any great extent from the tide-line a protest could be made and the chart corrected'.[231] Tellingly, such chart correction would be irrelevant if it were the datum and not the marked line that was decisive in locating the low-water line.

Two further facts confirm this refashioned understanding of the low-water mark in the ILC proceedings. First, the use of a tidal datum ('mean low-water spring tides') to check coastal state discretion was deleted; instead, a charted line was introduced ('high-water line') to assist in detecting the location of the baseline where the delineation of the low-water mark was imprecise or absent in nautical charts.[232] Second, the reference to charts in the provision was phrased in stronger terms, with the words 'indicated on' being replaced with 'as marked on', lending greater authority to the delineated line. That the meaning of the low-water mark was misunderstood by the ILC is not surprising; members of the Commission confessed they were unfamiliar with the deliberations that culminated in Draft Article 14, and even suspended their discussion so the Special Rapporteur could consult its drafting history to explain the proviso.[233] Eventually, a draft article formulated by the ILC was adopted[234] with little discussion[235] as Article 3 of the Territorial Sea Convention at UNCLOS I, stating:

> Except where otherwise provided in these articles, the normal baseline for measuring the breadth of the territorial sea is the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State.[236]

[231] ILC Yearbook Vol. I (1954) 65.

[232] Although this provision was ultimately deleted, it was only because members of the commission considered that it 'might lead to confusion, since it could be interpreted as meaning that not only a ship on the high seas but also the coastal State must take the high-water line as base line in the absence of detailed charts, which was not the Commission's intention': ILC Yearbook Vol. II (1955) 35.

[233] ILC Yearbook (n 225) 174.

[234] The provision was adopted with seventy-five votes in favour, none against and one abstention: Official Records of the UNCLOS Vol. II (1958) 62.

[235] Official Records of the UNCLOS Vol. III (1958) 139-141.

[236] François Report (n 228); Article 3 Convention on the Territorial Sea.

It was this provision that made its way through UNCLOS III, without meaningful discussion or change, and was adopted as Article 5 LOSC.[237] Due to the greater temporal and syntactic proximity of Article 5 to the ILC's draft article and discussions, we must conclude that it is, ultimately, their interpretation which was employed in the final definition of the baseline:[238] the 'low-water line' is, accordingly, a charted line. Whether it is charted fact or fiction, however, must still be studied.

## II. The Obligation to Revise Charted Baselines

The preceding discussion on the normative content of the low-water mark is not one that exists in abstract; both schools of thought insist on their interpretation only because they believe it holds immense practical significance for determining whether the normal baseline is ambulatory in nature: an issue of critical significance in the context of sea-level rise. As Kapoor and Kerr insist, arguing for the predominance of the charted line, 'once the normal baseline has been established and cartographically depicted on large scale charts it remains in place…whether or not the actual low water line has physically moved'.[239] In contrast, Reed upholds the tidal datum's pre-eminence in the definition of the baseline, asserting '…its ambulatory nature. The coast line, or baseline, is the mean low-water line. As that line moves landward and seaward with accretion and erosion, so does the baseline. As the baseline ambulates, so does each of the maritime zones measured from it'.[240]

Although the tidal datum interpretation of the low-water line would imply an ambulatory baseline, little justification is offered for why the same doesn't hold true in the case of the charted line. Disputing the presumptive permanence of the charted line, this section will

[237] Virginia Commentary (n 70) 88.

[238] See: Gaja, 'Interpreting Articles Adopted by the ILC' (2015) 85(1) BYIL 10, 20.

[239] Kapoor & Kerr (n 120) 31.

[240] Reed (n 120) 185.

demonstrate the existence of an implied obligation within the confines of Article 5 that mandates the revision of the charted line when faced with appreciable geographic change. It will do so by situating the text of the provision in its context [**A**], canvassing state practice that seeks to apply it [**B**], probing its preparatory work [**C**], before finally addressing its treatment in judicial proceedings [**D**]. In conclusion, it will be argued that the debate on charted line versus chart datum does not impact the ambulatory nature of the baseline; rather, it is only relevant for determining when and how such ambulation occurs [**E**].

### A. The Text and Context of Article 5

The existence of a continuing obligation of accuracy is hinted at, first, by the reference to nautical charts in Article 5 LOSC. Such charts exist primarily to ensure navigational safety for vessels passing through the waters of a coastal state; as such, they have to be updated habitually to ensure their enduring credibility in response to coastline change.[241] That the drafters of Article 5 relied on the low-water mark indicated in such charts was, in part, a practical measure – this line is frequently indicated on nautical charts to alert vessels of their proximity to the coast, and thus could be adopted with relative simplicity as the legal baseline for maritime limits.[242] Yet, it could not have escaped their attention (nor, indeed, that of the committee of experts consulted by them) that the charts they were choosing to hinge the baselines on were not permanent, but subject to intermittent revision. If fixity of the baseline was desired, it would have seemed obvious that a particular chart would have to be given primacy.[243] That this was

[241] DOALOS, *Baselines: An Examination of the Relevant Provisions of the UNCLOS* (1989) 1-2; Lathrop (n 192) 76-77.

[242] Ibid.

[243] Symmons & Reed, 'Baseline Publicity and Charting Requirements' 41(1) ODIL (2010) 77, 79; ILA (n 120) 17-18.

not done suggests that, when read in context, Article 5 requires coastal states to revise their baselines in response to geographic change.[244]

Employing a contextual interpretation, one can also infer this obligation a contrario from the terms of Article 7(2) LOSC, which allows for the temporary preservation of straight baselines where a highly-unstable coast causes regression of the low-water line.[245] It is critical to note here that the provision categorically refers to a regression of the 'low-water line' as a consequence of coastal change. It does not elect to describe the conditions for invoking Article 7(2) as a regression of the shore, of the coastline represented by the tidal datum or any such similar physical feature, though it could have done so. Instead, it unambiguously refers to a movement of the 'low-water line', the charted feature that defines the baseline, as per Article 5 – a movement that could not occur but for its ambulatory nature. Indeed, Article 7(2) would be entirely redundant if the charted line were fixed and remained unmoved by geographical changes to the coast: why would it be necessary to explicitly preserve some baselines if they were all, in any case, permanently secured?[246] The ut res principle, considered a facet of good faith interpretation, mandates that every provision must be construed in a fashion that renders it effective, such that 'a reason and meaning can be attributed to every part of the text'.[247] Article 7(2) can only be read in an effective fashion by concluding that baselines ambulate.

[244] Churchill, Lowe & Sander (n 131) 106.

[245] An a contrario reading of treaty provisions, 'by which the fact that the provision expressly provides for one category of situations is said to justify the inference that other comparable categories are excluded', is a legitimate tool of treaty interpretation regularly employed by international tribunals: S.S. Wimbledon 23-4; Nicaragua v. Colombia (2011) 432; Nicaragua v. Colombia (2016) 116.

[246] See: Busch (n 133) 220; Hoque, *The Legal and Scientific Assessment of Bangladesh's Baseline* (2006) 73; Stoutenburg, *Disappearing Island States in International Law* (2015) 132.

[247] Gardiner (n 35) 179.

Purcell argues that Article 7(2) merely restates the general rule that baselines remain stable to provide abundant clarity in circumstances of coastal change.[248] However, this argument offers little aid in understanding why the provision proceeds to then assert that baselines shall remain effective only 'until changed by the coastal State in accordance with this Convention'. This can only be reasonably construed as a reference to the coastal state's obligation to revise baselines in response to geographic change, as implicit in the Convention. To read it as a statement merely empowering states to revise baselines if they so choose, as Purcell does, is troubling: first, this would render it a superfluous supplement to an already-redundant provision, contradicting the 'ut res' principle; and second, such clarification offers little utility, since no coastal state would ever wilfully choose to revise its baselines and shrink its entitlement in response to a regression of the coast. That Article 7(2) elects to employ the imperative 'until' and not the volitional 'unless' further militates against this reading. Overall, the purpose and phrasing of Article 7(2) make far more sense when read as granting coastal states temporary respite from the obligation to revise their baseline, than as a restatement of the permanence of baselines.

Such an obligation to revise also conforms with the LOSC's framework for allocation of rights and obligations on the basis of distance from land – an element of the treaty's context. This territorial tie is not an abstract creation but provides the latent justification for the assignment of rights to a coastal state in its adjacent waters.[249] Article 121 LOSC illustrates this territorial nexus, providing that islands may only generate an exclusive economic zone if they support 'human habitation' or an 'economic life of their own'; a similar status is denied

[248] Purcell (n 120) 52. See also: Di Leva & Morita, 'Maritime Rights of Coastal States and Climate Change' World Bank Law and Development Working Paper Series (2008) 5, 18.

[249] Lisztwan (n 133) 168-9.

to rocks that do not sustain such habitation or economic activity.[250] Correspondingly, complete sovereignty is exercised in a state's internal waters because they are considered to lie within the 'jaws of the land', bearing sufficient nexus with the land to be equated with it in their legal treatment.[251] As Article 7(3) describes, 'the sea areas lying within the [baselines] must be sufficiently closely linked to the land domain to be subject to the regime of internal waters'.[252] In similar fashion, the LOSC imposes duties on states within their maritime zones, including those to 'give appropriate publicity to any danger to navigation, of which it has knowledge, within its territorial sea',[253] to cooperate for the conservation and management of highly migratory species in its exclusive economic zone,[254] for 'the protection and preservation of the marine environment' in the exclusive economic zone,[255] and to adopt laws to prevent, reduce and control pollution of the marine environment arising from seabed activities within their jurisdiction.[256] It does so on the assumption that the coastal state is more capable than any other of fulfilling these duties because of its physical proximity to these zones.[257] Yet, if baselines were fixed permanently and did not carry an obligation of revision, the justification for these rights and duties breaks down. In situations of significant geographic change, it makes little sense to permit a coastal state to claim vast swathes of the sea as its internal waters, nor for a submerged island to retain economic rights spanning 200 nm with accompanying duties to

[250] van Dyke and Brooks, 'Uninhabited Islands' 12 ODIL (1983) 286; van Dyke and D. Bennett, 'Islands and the Delimitation of Ocean Space in the South China Sea' 10 Ocean Yearbook (1993) 79; Song, 'The Application of Article 121 LOSC' 9 CJIL (2010) 663, 680.

[251] Edeson, 'Australian Bays' Australian Yearbook of International Law (1968) 5; Degan, 'Internal Waters' 17 NYIL (1986) 3; Rothwell & Stephens (n 138) 32.

[252] See: Alleged Violations of Sovereign Rights 87.

[253] Article 24 LOSC.

[254] Article 64 LOSC.

[255] Article 56 LOSC.

[256] Article 208 LOSC.

[257] Lisztwan (n 133).

manage the natural environment. Indeed, such scenarios would significantly undermine the efficacy of the LOSC framework.

Moreover, to deny the existence of this obligation to revise transgresses the 'land dominates the sea' maxim, a general principle of law[258] that must be taken into account whilst interpreting Article 5 LOSC.[259] Weil affirms that the baseline sits at the core of this principle: 'the land dominates the sea', and it does so 'by the intermediary of the coastal front'.[260] Noting the importance of coastal geography in this principle, judges in the Libya/Malta Continental Shelf case declared:

> The seaboard is a parameter which enables use to be made of the sea; it is a more or less important, more or less extensive, means of access to the sea. For that purpose it is expressed in units of measurement. Territorial sovereignty generates continental shelf rights by way of the coastal front…Given that sovereignty creates the legal entitlement but can only give it effect by way of the coast as "medium", it is this medium which becomes decisive for the concretization of the area of shelf attributed. The medium is defined by all its component elements, including length.
>
> No delimitation process between two opposite States can be carried out without taking account of the "coastal geography" and the "coastal relationship".[261]

Therefore, to argue for the continued survival of outdated baselines that no longer correspond with such 'coastal geography' is to 'flip the basis of entitlement on its head: the land would no longer dominate the sea if maritime rights and jurisdiction could persist after the permanent disappearance or destruction of the territory from which that title was derived'.[262]

### B. Subsequent Practice

[258] The status of the 'land dominates the sea' norm as a general principle of law has been confirmed in several decisions of the ICJ: Romania v. Ukraine 89; Qatar v. Bahrain 97; Aegean Sea Continental Shelf 36; North Sea Continental Shelf 51.

[259] Article 31(3)(c) VCLT; Gardiner (n 35) 306-7.

[260] Weil (n 175) 50.

[261] Libya/Malta (Separate Opinion of Judges Ruda, Bedjaoui and de Arechaga) 83-84.

[262] Lathrop (n 192) 78.

State practice, which 'establishes the agreement of the parties'[263] concerning the interpretation of Article 5, also provides convincing evidence of an obligation to revise baselines – a fact notably neglected in the writing of those who argue for the permanent fixity of such lines.[264] Australia,[265] Finland,[266] the Netherlands[267] and the United States[268] regularly update their charted lines in response to coastline change. Nigeria,[269] Cameroon,[270] Qatar,[271] Bahrain,[272] Colombia,[273] Nicaragua,[274] Costa Rica,[275] Honduras,[276] Ghana,[277] Côte D'Ivoire,[278] Myanmar,[279] Bangladesh,[280] India,[281] Guyana,[282] Suriname,[283] the United Kingdom,[284]

[263] Article 31(3)(b) VCLT.

[264] See: Purcell (n 120); Kapoor and Kerr (n 120).

[265] Hirst & Robertson, 'Geographic Information Systems, Charts and UNCLOS' 136 Maritime Studies (2004) 1-6.

[266] Prescott & Schofield, *The Maritime Political Boundaries of the World* (2nd edn, 2005) 161.

[267] Dorst et al, 'Recent Changes in the Dutch Baseline', Paper Presented at ABLOS Monaco Conference (2012); Lathrop (n 192) 78.

[268] Although not a party to the LOSC, the United States is a party to the Convention on the Territorial Sea, which contains an identical provision: 'Parties to the Convention on the Territorial Sea and Contiguous Zone' <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXI/XXI-1. en.pdf>.

[269] ILA (n 120) 15.

[270] Ibid.

[271] Qatar v. Bahrain 99.

[272] Ibid.

[273] Nicaragua v. Colombia (2012) 642.

[274] Nicaragua v. Honduras 692.

[275] Costa Rica v. Nicaragua 176.

[276] Nicaragua v. Honduras 693.

[277] Ghana/Côte d'Ivoire 76.

[278] Ghana/Côte d'Ivoire 91.

[279] Bangladesh/Myanmar 68-69.

[280] Bangladesh v. India 58.

[281] Bangladesh v. India 60.

[282] Guyana v. Suriname 128.

[283] Guyana v. Suriname 108.

[284] Carleton & Schofield, 'Developments in the Technical Determination of Maritime Space' 3(4) IBRU Maritime Briefing (2002) 61.

Belgium,[285] Norway,[286] Canada,[287] and Denmark[288] have acknowledged the necessity of revising baselines due to geographic change, in the course of delimitation proceedings. French Polynesia, Niue, Cook Islands, Samoa, Tokelau, Tonga and Tuvalu have, to counter the threat of a loss of entitlements, called on states to 'permanently establish baselines…without taking into account sea level rise'[289] – a plea that would only be necessary if baselines weren't already permanently established, providing further evidence of their ambulatory nature. In similar fashion, The Federated States of Micronesia, Republic of Kiribati, Republic of the Marshall Islands, Republic of Nauru, Republic of Palau, Independent State of Papua New Guinea, Solomon Islands and Tuvalu have agreed, in the Delap Commitment, to 'pursue legal recognition' that baselines established under LOSC 'remain in perpetuity irrespective of the impacts of sea level rise';[290] again, that recognition must be pursued reveals their belief that the proposal is de lege ferenda. The Framework for a Pacific Oceanscape Report, adopted by Member States of the Pacific Islands Forum, including New Zealand, Vanuatu, Fiji, Micronesia and Timor-Leste, also recognizes that baselines will ambulate in response to sea level rise and therefore recommends advocacy to seek their permanent establishment.[291] That Japan and Iceland invest millions to protect uninhabited islands from sea-level rise to preserve a claim to their EEZ and continental shelf reveals their belief that the charted baseline is not fixed and will require revision due to geographic change.[292] This survey of practice demonstrates the

[285] Ibid.

[286] Schofield & Sas, 'Uncovered and Unstable Coasts' in Lalonde & McDorman (eds), *International Law and Politics of the Arctic Ocean* (2015) 291.

[287] Ibid.

[288] Ibid.

[289] The Taputapuātea Declaration (2015).

[290] The Delap Commitment (2018).

[291] Pratt & Govan, *Framework for a Pacific Oceanscape* (2010) 31.

[292] Schofield (n 84) 217-218.

shared understanding of states that, under the existing legal framework, they are bound by an obligation to ensure the geographical accuracy of baselines.

### C. The Preparatory Work

The preparatory work of the provision, employed to 'confirm the meaning' arrived at through the preceding interpretive exercise,[293] also point to a continuing obligation to ensure the accuracy of the charted line. The Report of the Territorial Sea Committee at the Hague Codification Conference specifies that the vertical datum proviso in Article 14 was added to ensure the accuracy of the line employed as the baseline: 'the line indicated on the chart must not depart appreciably from the more scientific criterion: the line of mean low-water spring tides'.[294] Although this proviso was ultimately removed, the deliberations of the ILC reveal that this was only because the requirement of accuracy was considered implicit within the provision, and did not have to be explicitly laid out; indeed, they were concerned that the phrase 'appreciable departure' in the proviso would render the challenge of charted lines more cumbersome and hence sought its deletion.[295] As Amado noted, 'the proviso should be deleted, since, if the low-water mark in official charts departed appreciably from the line of mean low-water spring tides, those charts would not be accurate and their validity would be questioned by any legal tribunal'.[296] Similarly, Scelle observed that the proviso was, in any case, not exhaustive as it did 'not exclude charts which were unacceptable on other grounds, as being out of date, for instance'.[297]

[293] Article 32 VCLT.

[294] Rosenne (n 221) Annex IV.

[295] ILC Yearbook (n 225) 171-4.

[296] ILC Yearbook (n 225) 172.

[297] ILC Yearbook (n 225) 178.

Purcell concludes that these statements only exhibit a concern with geographical accuracy at the time of drawing limits; they do not imply a continuing obligation to ensure the accuracy of the charted line.[298] To this, we must first note that, at the time these deliberations took place, there was little knowledge of the large-scale geographic change predicted to occur due to anthropogenic climate change. Consequently, neither the Hague Conference nor the ILC had reason to explicitly discuss continuing accuracy. However, noting, as demonstrated above, that they did not consider the establishment of the normal baseline and its limits a one-time exercise, and that they were demonstrably concerned with ensuring geographic accuracy, it is submitted that the more reasonable construction of their deliberations confirms a continuing obligation to ensure the geographic accuracy of the charted line.

### D. Jurisprudence

Delimitation jurisprudence also provides compelling evidence of an obligation to revise baselines. Such decisions, however, must be considered with caution since tribunals, not bound by the charted baseline, hold wide discretion in picking basepoints.[299] Nonetheless, they do frequently opine on and employ states' normal baselines in this task and, thus, will be consulted, though only in this limited context. In Guyana v. Suriname, for instance, the tribunal considered the impact of Vissers Bank, a low tide elevation formed by natural accretion over time, on the state's normal baseline under Article 5 LOSC. Suriname insisted that 'small changes in the shape or presence of low-tide features along a coast, whether due to accretion or erosion or other natural processes…change the configuration of the low-water line'.[300] Guyana did not contest the legal question, but rather pointed out that the updated chart relied on by Suriname was geographically inaccurate and that 'satellite imagery, disprove the

[298] Purcell (n 120) 187.

[299] Lathrop (n 192) 79.

[300] Rejoinder of Suriname 108.

existence of a low-tide coast at Vissers Bank where Suriname placed its purported basepoint S14'.[301] The tribunal ultimately relied on Suriname's charted line, but only because it was 'not convinced that the depiction of the low-water line on chart NL 2218, a chart recognised as official by Suriname, is inaccurate'.[302] If charted lines were permanently established, the tribunal need not have concerned itself with verifying whether geographic change was accurately accounted for in an officially recognized chart. That they did so suggests that the charted baseline is subject to an obligation of revision, and that it ambulates.

In Nicaragua v. Colombia, the ICJ had to ascertain whether Quitasueño and its features were above water at high tide to determine whether 'they contribute to the baseline from which the breadth of the territorial sea is measured'[303]: evidently a decision on the content of the 'normal baseline'. The Court stated in clear terms that:

> It does not consider that surveys conducted many years (in some cases many decades) before the present proceedings are relevant in resolving that issue. Nor does the Court consider that the charts on which Nicaragua relies have much probative value with regard to that issue…
>
> The Court considers that what is relevant to the issue before it is the contemporary evidence. Of that evidence, by far the most important is the Smith Report [the expert report], which is based upon actual observations of conditions at Quitasueño and scientific evaluation of those conditions.[304]

Disregarding the geographically inaccurate charts introduced by Nicaragua, the Court relied on the aforementioned expert report to make its decision.

In Nicaragua v. Honduras, both parties, noting that coastline changes at the mouth of the River Coco affected the location of the baseline, relied on satellite imagery rather than official nautical charts to establish the location of the low-water line.[305] The ICJ acknowledged the

[301] Guyana v. Suriname 128.

[302] Ibid.

[303] Nicaragua v. Colombia (2012) 641.

[304] Ibid 644.

[305] Nicaragua v. Honduras 692-3.

instability and active morpho-dynamism at the river's mouth, and held that although 'Honduras has deposited with the Secretary-General of the United Nations a list of geographical co-ordinates for its baselines for measuring the breadth of its territorial sea' including '…Point 17, as having co-ordinates 14° 59.8′ N and 83° 08.9′W…identified in 1962 as being the thalweg of the River Coco at the mouth of its main branch', as a consequence of coastal change '[t]his point, even if it can be said to appertain to Honduras, is no longer in the mouth of the River Coco and cannot be properly used as a base point (see UNCLOS, Art. 5.)'.[306] The invocation of Article 5, here, confirms an obligation to ensure the enduring geographical accuracy of the baseline charted therein.

Similarly, in the Ghana/Côte D'Ivoire delimitation proceedings, Côte D'Ivoire argued that '[t]he instability of the coastline presents serious risks to the reliability of a maritime boundary established according to base points which are located on these shifting coasts and which, hence, are also variable', asking the Special Chamber to rely on a chart drawn from 2014 data.[307] Ghana, conceding that baselines do shift in response to geographic change, only contested Côte D'Ivoire's factual assessment, asserting that 'there is no basis for arguing that the relevant coasts of Ghana and Côte d'Ivoire are unstable' and, therefore, sought to employ a 19th century British Admiralty Chart.[308] The Special Chamber noted that in assessing a state's baselines, 'a more recently prepared chart is preferable in principle', yet here it was 'not convinced by the argument advanced by Côte d'Ivoire that the relevant coasts of Ghana and Côte d'Ivoire are unstable',[309] implying, once again, that coastal instability would have impact charted baselines.

[306] Ibid 743.

[307] Ghana/Côte d'Ivoire 91.

[308] Ibid 76.

[309] Ghana/Côte d'Ivoire 92, 97.

In the Bay of Bengal Maritime Boundary Arbitration, Bangladesh challenged India's use of South Talpatty, a low-tide elevation which, in Bangladesh's view 'disappeared permanently below the surface in the late 1980s or early 1990s' and could no longer be employed in its baseline.[310] India did not respond to such claims by asserting the permanence of outdated charted lines; instead, it submitted that 'all modern charts depict South Talpatty/New Moore as a low-tide elevation'.[311] In order to resolve this dispute, the tribunal appointed an Expert Hydrographer to prepare a report of the situation on the ground, conducted actual site-visits to ascertain the nature of the feature, and relied only on what it considered 'the most reliable evidence, resulting from the latest surveys and incorporated in the most recent large-scale charts'.[312] Through this, it concluded that South Talpatty could no longer be considered as 'situated on the coastline' and was not, therefore, a valid basepoint:[313] further proof that charted baselines ambulate.

In Qatar v. Bahrain, the latter sought to employ Qit'at Jaradah as a basepoint, arguing that although it was not depicted as an island in official charts drawn up in 1947, it had 'in 1986, recovered its island status by natural accretion'.[314] Qatar countered that 'Qit'at Jaradah is not, and has never been, reflected on nautical charts as an island but always as a low-tide elevation and that this is in conformity with its true character',[315] suggesting its belief that although nautical charts are the source of a state's baseline, such charts must still conform to the 'true character' of coastal features. The ICJ, here, did not determine the status of the feature

[310] Bangladesh v. India 58.

[311] Ibid 60.

[312] Ibid 64.

[313] Ibid 74.

[314] Qatar v. Bahrain 99.

[315] Ibid.

by relying on the dated official chart; instead it relied on expert evidence and eyewitness testimony to conclude that Qit'at Jaradah had acquired island status.

This was also done in the South China Sea case. Noting the 'limitations in the chart evidence before it', the Tribunal used independent material from fresh surveys of the features in the Spratly Islands to determine their low-water line under Article 5 LOSC.[316] When this was contested by the Philippines, arguing that the Tribunal need only look at the depiction of these features on published charts, the Tribunal observed that:

> Article 5 provides for States to use the low-water line on large-scale charts as the baseline for the territorial sea. This provision, however, envisages a situation in which a State is presenting information concerning its own coastlines in areas that can be expected to be well surveyed and well charted by that State. Considerations of an altogether different order arise where, as here, a determination involves the status of remote features, subject to the demands of competing States, that have been carefully surveyed only infrequently.[317]

Where features have been infrequently surveyed, the Tribunal noted that it could disregard published charts unless they were revised to 'correct errors or introduce new information', and use independent material to assess the location of the normal baseline.[318]

In the Black Sea Delimitation case, the ICJ departed from Romania's charted baseline at the Sulina dyke and adopted a basepoint further inland, noting that the 'land at this point is protected from shifts in the coastline due to marine processes' and that the law required it to 'use as base points those [features] which the geography of the coast identifies as a physical reality at the time of the delimitation'.[319] Likewise, in Maritime Delimitation in the Indian Ocean, when Kenya contested the physical location of the basepoint charted by Somalia off the southern tip of Ras Kaambooni, noting that it could not be confirmed through a field visit

[316] South China Sea 142.

[317] Ibid.

[318] Ibid.

[319] Romania v. Ukraine 106-108.

and that it 'appears nowhere', the Court discarded the basepoint observing that it 'considers it appropriate to place base points for the construction of the median line solely on solid land'.[320] Echoing this sentiment, the Court noted in Tunisia/Libya that 'what must be taken into account in the delimitation of shelf areas are the physical circumstances as they are today; that just as it is the geographical configuration of the present-day coasts, so also it is the present-day sea-bed, which must be considered'.[321] This survey of delimitation jurisprudence further supports the conclusion that baselines must conform to the geographic reality of the coastline.

### E. Automatic and Tethered Ambulation

We can conclude, therefore, that the normal baseline does ambulate. As a result, proposals to permanently fix the baseline and its limits by Schofield,[322] Caron,[323] Hayashi,[324] Freestone and Pethick,[325] also advocated by several threatened island-states,[326] are not viable – at least not within the LOSC framework, in its present form. Similarly, Bird and Prescott's proposal of 'masterly inactivity',[327] whereby coastal states simply decline to update their nautical charts, is also not legally tenable. Coastal states are required to ensure the continuing accuracy of their charted line.

Yet, the charted line versus chart datum debate is not a futile one; although both measures entail an ambulating baseline, the choice between them is critical for assessing the manner in which ambulation occurs. As Lathrop observes, under the datum school, ambulation

[320] Somalia v. Kenya (2021) 40.

[321] Tunisia/Libya 54.

[322] Schofield (n 19).

[323] Caron (n 19).

[324] Hayashi (n 19).

[325] Freestone & Pethick (n 19).

[326] See: ILA (n 18) 16-18.

[327] Prescott & Bird, 'The Influence of Rising Sea Levels on Baselines' in Grundy-Warr (ed), *International Boundaries and Boundary Conflict Resolution* (1990) 297.

is automatic;[328] consequently, both the low-water line and the jurisdiction that ensues from it are constantly in flux. Although charts carry presumptive weight, they are susceptible to challenge at all times and for even small deviations from the datum line.[329] The result of this is that sea-level rise and geographic change cause tremendous instability to the baseline and entitlements of a coastal state, offering it little measure of control over this process. Similarly, foreign vessels passing through its waters have little knowledge of where the precise limits of any coastal state entitlement lie at a given time. By contrast, the charted line offers relative stability; changes to the baseline are not automatic but are triggered only when the coastal state chooses to update its charts.[330] As a result, the state retains some measure of control in timing the changes in its entitlement and can adequately prepare for adjustments to its jurisdiction.[331] Foreign vessels, too, can navigate through waters with certainty of their limits. As Sohn and Noyes note, perfect stability is impossible to attain in maritime limits, measured, as they are, from impermanent features;[332] yet, through charts, it is possible to shackle their instability within judicious bounds.

The obligation to ensure the continuing accuracy of the charted line is not breached at the instant of change nor, indeed, by every minor coastal attrition. Rather, as case law, state practice and preparatory work indicate, it is only appreciable change that triggers this obligation;[333] while ascertaining the precise contours of this standard proves difficult, it can be said that changes in the status of features, or to critical basepoints that affect potential delimited lines or entitlement limits, will meet this threshold. It is only when a coastal state refuses to

[328] Lathrop (n 192) 77.

[329] Ibid.

[330] Lathrop (n 192) 78; Trümpler (n 192) 54.

[331] Ibid.

[332] Sohn & Noyes (eds), *Cases and Materials on the Law of the Sea* (2004) 235.

[333] Trümpler (n 192) 54.

account for such change within a reasonable time-period that its charted line becomes susceptible to challenge.[334] Yet, the question of whether appreciable change has occurred does, in turn, depend on the tidal datum selected. And in this, the coastal state still retains significant discretion. This will be examined next.

### III. Vertical Datum Calculations

The tidal datum is the vertical plane of reference at which a particular tide intersects with the coast.[335] It is, in effect, the height of a selected tide measured over a period of time, and constitutes the core of the 'low-water line'.[336] In calculating the location of the charted line, a state may employ any acceptable tidal datum: Lowest Astronomical Tide, Mean Lower Low Water, Mean Higher Low Water, Mean Low Water Springs, Mean Low Water Neaps, Indian Spring Low Water, Lowest Low Water etc.[337] Each of these represents a different model for mathematically approximating the location of the low-water line. A graphical representation of the tidal datums can be found in Appendix II. No one datum is legally binding; consequently, states are afforded the discretion to select any they consider suitable.[338] It is against the updated lines forecasted by this datum that the charted line must be compared in order to gauge appreciable geographic change. Yet, this is far from its only purpose. The drawing of straight baselines is contingent on a highly indented, cut-into or unstable coastline;[339] it is also to this coastline that the basepoints are anchored.[340] At the mouths of rivers, the baseline is affixed

[334] Measured from the time appreciable geographical change is depicted in updated nautical charts, any undue delay in mirroring such change in the selected charted line could be termed 'unreasonable': Trümpler (n 192) 54. The question of what constitutes appreciable change is discussed further in Chapter 3.

[335] Antunes (n 191) 5.

[336] IHO, *A Manual on Technical Aspects of the LOSC* (4th edn, 2006) 2-18.

[337] Antunes (n 191) 7.

[338] Schofield, 'Departures From the Coast' 27(4) IJMCL (2012) 723-732; ILA (n 120) 25.

[339] Article 7(1) & (2) LOSC.

[340] Ibid.

between points on the banks.[341] To determine whether a closing line may be drawn across a bay, one must measure the indentation of the shore, as well as the width of its mouth.[342] The configuration and location of the coastline, of river banks, and of the shore and mouth of a bay can only be assessed through the low-water line which, in turn, is calculated through the tidal datum.[343] Similarly, the status of islands and low-tide elevations is determined in relation to their position at the high and low tide, again an assessment that hinges on the datum employed.[344] The choice of datum, therefore, is inexorably interwoven into the LOSC's scheme of baselines and entitlements.

Understandably, much of the academic literature that has considered the choice of tidal datum so far has done so from the perspective of enhancing maritime claims.[345] As most acknowledge, this choice has very limited potential for extending the limits of a state's maritime entitlement.[346] The ILC noted, while removing the prescription of 'mean low-water springs' from their provision on the normal baseline, that the choice of datum was 'hardly likely to induce Governments to shift the low-water lines on their charts unreasonably'.[347] However, a criterion that has been ignored in the assessment of such calculations, and that attains vital significance in the context of sea-level rise and geographic change, is the resilience of maritime claims. As Árnadóttir correctly observes,

> …coastal States are afforded some discretion in choosing the datum most suitable to advance their maritime claims. Thus, States can have an impact on how much and how often maritime limits fluctuate.

[341] Article 9 LOSC.

[342] Article 10 LOSC.

[343] Lathrop (n 192) 77; Trümpler (n 192) 47.

[344] Ibid.

[345] See, for instance: Schofield (n 338); Antunes (n 191); Tanaka (n 31) 54-56.

[346] The exception to this rule, of course, is the choice of datum employed in assessing the status of islands and LTEs. Here, the resort to a more extreme datum that lies further out at sea and, thereby, preserves the status of the feature, even if for only a brief time period, may be justified – though, whether such extreme datum choices constitute a reasonable and good faith interpretation of the high and low tide line might be contested. See: Trümpler (n 192) 51.

[347] ILC Yearbook Volume II (1956) 267.

> In addition to using the lowest possible low-water datum for their baselines, States can use the lowest possible high-water datum to categorize low-lying features as rocks or islands (rather than low-tide elevations) and the longest possible time span to decelerate changes.[348]

However, she neglects to specify precisely how this choice in datum should be leveraged to stabilise a coastal state's maritime claims. That is what this section aims to do.

It would be apt to note, at the outset, that the choice of vertical datum will not offer equal utility to all states in their quest to preserve, as far as legally possible, their baselines and entitlement limits. The impact of sea-level rise will be felt in different forms and at different times by most states. Yet, this choice will be particularly pertinent for those states where the gradient of the coastline is slight, the tidal range is large, or where the land is prone to flooding, erosion, storm surges, land-slips, or other extreme meteorological conditions.[349] It will also be relevant for states experiencing regional geological processes, such as the rebound of land previously weighed down by ice sheets, causing it to rise or sink.[350] Such datum selection might also prove important for states where changes in coastal winds and currents cause ocean waters to pile against or move away from the shore.[351]

For such states, it might first be favourable to adopt the lowest astronomical tide ('LAT') datum as the measure of their low-water line. This datum is calculated only on astronomical conditions; as a result, it evades the effect of meteorological events, such as storm-surge induced extreme sea-levels, cyclones, hurricanes, flooding (all of which are predicted to occur with increased frequency and intensity as a consequence of mean sea-level rise and anthropogenic climate change) and changed rainfall patterns. That it requires a large data-set and is expensive to calculate is why several developing states have been reluctant to

[348] Árnadóttir (n 133) 25.

[349] Schofield (n 338); Antunes (n 191); Prescott & Bird (n 327).

[350] IPCC (n 87) 10-11.

[351] Ibid.

adopt it.[352] Nonetheless, while this cost might prove gratuitous for a minor expansion of maritime entitlements (the current lens through which tidal datum selection is considered), it could be justified when conceived as a means to enhance the resilience of baselines and entitlement limits; for this reason, the use of the LAT datum warrants serious consideration.

For states that choose not to employ the LAT datum, a second option might be to expand the period over which they collect tidal data to calculate the location of the low-water line. Adopting a full metonic cycle[353] of approximately nineteen years could widen the dataset employed and offer significant advantages in dampening the impact of the skewed data likely to be detected in coming years as a consequence of sea-level rise. This would, in effect, slow down changes to the low-water line.[354] Some have even considered the possibility of measuring the tidal datum over multiple metonic cycles of fifty-five, seventy-four and even a hundred years – though it seems unlikely that this would constitute a good faith interpretation of the low-water line.[355] Moreover, if relying on simple means to calculate their tidal datum, a third alternative for coastal states could be to employ more robust measures of central tendency, such as medians, trimmed or truncated means, interquartile means, and winsorized means,[356] which suffer slighter variations when confronted with skewed data.[357]

Finally, as tidal datum measurements are not conducted at every point along the coast, but only at regular intervals, through the placement of tidal gauges, a fourth tool could be to

[352] Cleverly & Fietta, *A Practioner's Guide to Maritime Boundary Delimitation* (2016) 39.

[353] 'A period of 19 years, after which the various phases of the moon fall on approximately the same days of the year as in the previous cycle': IHO Hydrographic Dictionary.

[354] Prescott & Schofield (n 266) 154.

[355] Trümpler (n 192) 51.

[356] See, generally: Crawley, *Statistics: An Introduction using R* (2014) 42.

[357] State practice indicates significant discretion in the mathematical calculation of the low-tide line. See, for instance, the 'safety margins' employed by Norway, the 100-year estimations applied by Argentina and the annual discounting of 6 months of 'unreliable' data by Finland in the calculations of their datum: Norwegian Mapping Authority, Miscellaneous Notices to Mariners – Tidal Waters; IHO, Member States' Responses to CL 27/2016 (2017).

place such gauges at points along the coast that are less susceptible to erosion and flooding.[358] In addition, it might be useful to artificially preserve the physical landmass for gauges located near critical basepoints that influence the location of maritime limits.[359] While a lengthier examination of the impact of vertical datum calculations on baselines and limits is vital, it lies outside both the scope of this section and the abilities of its author. It is, however, sufficient to conclude that coastal state discretion in tidal datum calculations offers a promising yet under-examined means of preserving the resilience of the normal baseline in the face of sea-level rise. That such datum calculations are particularly expensive and cumbersome to disprove adds to their lure for coastal states threatened by significant geographic change.[360]

## Conclusion

This Chapter argued that the reference to the low-water line 'as marked on large-scale charts' in Article 5 LOSC is a reference to the charted line. A close examination of the treaty's preparatory work revealed that although the reference to charts originally insinuated the preponderance of the chart datum at the Hague Conference, it was subtly altered to signify the delineated line over the course of ILC deliberations and UNCLOS I. However, this does not imply, as some assume, a fixed, non-ambulatory baseline. A contextual examination of Article 5, paired with a study of state practice and preparatory work, disclosed the existence of an obligation to ensure the enduring accuracy of the charted line. Delimitation jurisprudence confirmed this deduction. Through this study it was shown that even the charted line ambulates; yet, by offering coastal states some degree of control in coordinating ambulation, this line does offer the cogent advantage of relative stability. Finally, the Chapter advocated greater focus on vertical datum calculations, illustrating how the resilience of maritime claims could be

[358] Trümpler (n 192) 54.

[359] The artificial preservation of coastlines will be discussed in greater detail below, in Chapter 4.

[360] Cleverly & Fietta (n 352).

bolstered through this method. By canvassing the content of Article 5, this Chapter demonstrated that the normal baseline is subject to an obligation of revision, that the coastal state exercises a critical degree of discretion in how this line is to be charted and revised, and how this discretion could be leveraged to enhance the resilience of its maritime claims.

# Chapter 3

# The Resilience of Straight Baselines

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## Introduction

The study of normal baselines and the low water mark in Chapter 2 revealed resilience hidden within the rules that govern their construction. However, the low water mark is not the only method of fashioning a baseline under the LOSC. One alternative is the straight baseline. which offers distinct advantages to coastal states in enhancing the resilience of their entitlements, and shall be examined next.

Coastal states have the discretion to adopt a baseline system of their choice,[361] and can switch from the normal baseline to the straight baseline if they so desire (provided, of course, that they satisfy the conditions for drawing straight baselines). This option could play a vital role in preserving their maritime claims when faced with sea-level rise. Critically, the straight baseline only coheres to the coast at its two endpoints, whereas the normal baseline is tied to

[361] Article 14 LOSC.

the shore for the entirety of its breadth. Therefore, straight baselines are far less vulnerable to the threat of coastal retreat, since only geographic change at the endpoints can trigger an obligation of revision.[362] As a corollary, this baseline is also easier to preserve through artificial measures and can often be revised by a straightforward linear extension of the endpoints, avoiding any palpable impact on the spatial configuration of a coastal state's entitlements.[363] Yet, perhaps the most compelling advantage to be found in such baselines is the opportunity to defer the obligation of revision when faced with geographic change. This may hold the key for several coastal states seeking a path to preserve their entitlements as they await a new, stable framework for jurisdiction at sea. This Chapter will explore how straight baselines could be used by coastal states to enhance the resilience of their maritime claims in the context of sea-level rise.

The Chapter begins by supporting the construction of straight baselines in areas with rapidly retreating shores, arguing that coastal instability constitutes an independent ground for the drawing of straight baselines under Article 7(2) LOSC [**I**]. Next, the Chapter examines the resilience of straight baselines where the coastline has suffered retreat, exploring the trigger for their revision and means by which such revision could be deferred [**II**]. Although this Chapter will only address the text of Article 7 LOSC while constructing its argument, this provision is recognised to reflect customary international law.[364] Therefore the conclusions derived here are also of use to non-parties to the LOSC.

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[362] Admittedly, geographic change to the shoreline at large may also impact the 'general direction of the coast' criterion, undermining the validity of a constructed straight baseline. However, as argued in Section II below, the ambiguity surrounding the normative content of this phrase renders it a particularly cumbersome ground to challenge a baseline, with several avenues available to threatened coastal states to avoid the designation of an appreciable departure from the general direction of the coast.

[363] Prescott & Bird, 'Rising Global Sea Levels and National Maritime Claims' 1 Maritime Policy Reporter (1989) 177, 190; Menefee, 'Half Seas Over: The Impact of Sea Level Rise on International Law and Policy' 9(2) UCLA Journal of Environmental Law and Policy (1991) 175, 206.

[364] Anglo-Norwegian Fisheries 128-9; Qatar v. Bahrain 103; Alleged Violations of Sovereign Rights 83; Bernhardt, 'Custom and Treaty in the Law of the Sea' 205 RCADI (1987) 287-88; Scovazzi, 'The Evolution of

## I. Coastal Instability as a Justification for Using Straight Baselines

It isn't startling to note the considerable attention afforded to Article 7(2) LOSC in the literature on geographic change and the law of the sea.[365] As the only provision in the Convention that directly addresses the question of geographic change, it plays a pivotal role in helping us understand how the treaty was intended to handle coastal retreat. According to its terms:

> Where because of the presence of a delta and other natural conditions the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line and, notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective until changed by the coastal State in accordance with this Convention.[366]

Yet, much of the focus on Article 7(2) is tangential, employing the text of the provision to creatively interpret other aspects of the LOSC, such as Article 5 or Article 76, a contrario.[367] The possibility of using this provision directly, as a tool to tackle sea-level rise, is occasionally considered, but dismissed after brief discussion.[368] This section will demonstrate that the grounds on which direct application of Article 7(2) in situations of sea-level rise is dismissed are underexamined. The section will first address whether Article 7(2) is subordinate to its preface, Article 7(1) [**A**]. Arguing that Article 7(2) is an independent ground for the construction of straight baselines, the section will then consider the content of the phrase 'delta and other natural conditions' [**B**]. It will demonstrate that these words imply disjunctive rather than conjunctive conditions, and the presence of a river delta is not essential for the construction of straight baselines under Article 7(2). Finally, the question of what constitutes a 'highly unstable' coastline will be discussed briefly to understand the threshold for employing Article

International Law of the Sea' 286 RCADI (2000) 155; Rothwell & Stephens (n 138) 44; ILA Baselines Committee, *Sydney Conference Report* (2018) 6.

[365] See, for instance: Prescott & Bird (n 327); Busch (n 133) 174; ILA (n 364) 3; Rothwell & Stephens (n 138) 44; Aurescu & Oral (n 21) 29; Árnadóttir (n 133) 18.

[366] Article 7(2) LOSC.

[367] See, for instance: Caron (n 19) 15; ILA (n 18) 3; Purcell (n 120) 49; Aurescu & Oral (n 21) 23.

[368] Caron (n 86) 635; Stoutenburg (n 246) 133; Trümpler, 'Article 7' in Proelss (n 72) 77; Aurescu & Oral (n 21) 29; Árnadóttir (n 133) 19.

7(2) [**C**]. Through this exercise, it will be demonstrated that Article 7(2) offers coastal states the opportunity to draw straight baselines on shores affected by sea-level rise.

### A. The Autonomous Nature of Article 7(2)

The most common critique levelled against Article 7(2) to posit its inapplicability as a ground for drawing baselines on retreating coasts is the argument that it is, in truth, no ground at all. Rather, its text is simply intended to clarify how the baseline referenced in Article 7(1) is to be calculated where the coastline in question is highly unstable. For those who support this position,[369] the presence of a 'deeply indented and cut into' coastline, or a 'fringe of islands', as articulated in Article 7(1), is indispensable to justify the use of straight baselines. As the UN Baselines Study notes (while also accurately summarising the two other arguments against employing Article 7(2) in the context of sea-level rise):

> Article 7, paragraph 2 relates to deltas. Three points need to be noted. First, this paragraph is subordinate to paragraph 1, and is not an alternative to it. In other words, for paragraph 2 to apply the coastline of the delta must satisfy the conditions set out in paragraph 1. Secondly, paragraph 2 of the article refers to "a delta and other natural conditions" so that for this paragraph to apply there must be a delta. Thirdly, the coastline must be "highly unstable".[370]

Support is also lent to this position by other portions of Article 7, employed to interpret Article 7(2) contextually.[371] Paragraph 5 of the provision, for instance, permits the consideration of economic interests '[w]here the method of straight baselines is applicable under paragraph 1'. The reference to paragraph 1 seems to indicate that this is the only

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[369] See, for instance: UN Baselines Study (n 241) 24; Brown, *The International Law of the Sea Volume I* (1994) 27; Roach & Smith, *Excessive Maritime Claims* (3rd edn, 2012) 67; Schofield & Sas (n 286) 291; Tanaka (n 31) 62; Aurescu & Oral (n 21) 29; Árnadóttir (n 133) 19; Churchill, Lowe & Sander (n 131) 72.

[370] UN Baselines Study (n 241) 24. The Study was drafted by the DOALOS along with high-level experts in the field to guide state practice on baselines so that it develops in a consistent manner on a highly-technical subject matter: Ibid iii. The DOALOS serves as the secretariat of the LOSC and is charged, inter alia, with '[p]romoting better understanding and wider appreciation of the United Nations Convention on the Law of the Sea…and assisting with [its] uniform and consistent application and implementation through the provision of information, advice and assistance to States', as well as '[c]onducting research and preparing substantive publications on the provisions of the Convention': <https://www.un.org/depts/los/doalos_activities/about_doalos.htm>.

[371] Article 31(1) & (2) VCLT. See also: ILC (n 35) 221; Linderfalk (n 38) 103; Gardiner (n 35) 197.

provision that can be used for the construction of straight baselines. Similarly, some read the phrase 'the appropriate points' in Article 7(2) as referencing the same points that are first described in Article 7(1), thereby requiring the conditions set out for such points in the first paragraph to apply with equal measure to those suggested in the second. Thus, based on the structure of the provision, one might suggest that Article 7(2) cannot be used on coasts impacted by sea-level rise, since it not an independent ground for the construction of straight baselines.

However, it must be acknowledged that the LOSC was negotiated without a prior draft from the ILC, on a 'package deal' approach with a consensus-based decision-making procedure.[372] Many provisions of the LOSC, including Article 7 LOSC, were drafted through the use of informal negotiating groups.[373] A consequence of this procedure was that the text of the draft Convention was difficult to perfect and, as a result, inconsistencies in language and structure persist in the treaty.[374] An argument based on inconsistent language and imperfect structure in Article 7, therefore, should not be considered fatal to the potential of employing Article 7(2) as an independent ground for the construction of straight baselines. Instead, other elements of the crucible approach to treaty interpretation must be considered before this assessment is made.

One such element is that of good faith interpretation, which mandates, inter alia, that an effective construction be provided to this provision according to the ut res principle.[375] If Article 7(2) were subordinate to 7(1), this would imply that its intended purpose is to

[372] Harrison (n 42) 46.

[373] Nandan & Rosenne (n 70) 97.

[374] Noyes (n 44) 234.

[375] Article 31(1) VCLT. See also: Corfu Channel 24; Free Zones of Upper Savoy 13; Japan–Taxes on Alcoholic Beverages 12; Aegean Sea Continental Shelf 22; Libya/Chad 25; Fitzmaurice (n 48) 203; ILC (n 35) 219; Linderfalk (n 38) 118-20; Thirlway (n 38) 1263; Gardiner (n 35) 179.

temporarily preserve straight baselines drawn on indented coastlines, or coasts fringed by islands, that are also simultaneously highly unstable. Yet, an unavoidable consequence of a high unstable coastline is that it cannot retain a fixed form or shape; therefore, it would be impossible to ascertain whether the coast is indeed 'cut into' or 'indented'.[376] Moreover, even if this assessment were somehow made, and a straight baseline drawn, the justification on which the baseline is based would, over time, disappear and reappear, placing the legal validity of the drawn baseline in a state of eternal flux. As Trümpler argues:

> If Art. 7(1) were a precondition for the application of Art. 7(2), only a deeply indented and highly unstable coast would benefit from the fictitious 'steadification' of the low-water line. As the low-water line is highly unstable, it might, at some point, change to a non-indented shape. In that case, the condition for the application of Art. 7(2) would cease to be met, but the privilege of Art. 7(2) covers only a regression of the coastline, not the disappearance of its conditions of application. The result would be that an unfavourable change in a highly unstable coastline calls the applicability of the regulation in question that was designed to privilege just such a coastline: a case of Art. 32(b) VCLT. The operating part of Art. 7(2) is clearly 'notwithstanding regression of the low-water line', the purpose of paragraph 2 is to provide some legal security as to the low-water line in a highly unstable environment. This is as necessary for an indented coast as it is for a smooth coastline.[377]

Hoque extends this critique, noting that the notion of a 'fringe' of islands also carries little sense when applied to a moving coastline, since the margin to which such islands are meant to adhere is itself impermanent.[378] He goes on to note that such coastlines often accrue new islands through the deposition of sediment, whilst also losing existing ones through erosion and other natural processes – particularly at the mouths of deltas, a feature that Article 7(2) explicitly describes itself as covering.[379] Article 7(2) would offer little utility as a tool of stabilising straight baselines if it were interpreted as subordinate to Article 7(1), since the conditions described in 7(1) cannot endure alongside the essential prerequisite of 7(2): coastal instability.

[376] Trümpler (n 368) 76.

[377] Ibid.

[378] Hoque (n 246) 76.

[379] Ibid.

Reading Article 7(2) as subordinate to 7(1) is also inconsistent with the object and purpose of the LOSC, which includes within it the object and purpose of particular provisions.[380] The normative justification for the use of straight baselines under Article 7 has always depended on their ability to rationalise the spatial configuration of entitlements produced by their application.[381] The UN Baselines Study observes that '[t]he concept of straight baselines is designed to avoid a tedious application of rules dealing with the normal baselines and the mouths of rivers and bays, where their application would produce a complex pattern of territorial seas'.[382] This justification served as the basis of the Anglo-Norwegian Fisheries decision[383] and has been repeatedly noted in scholarship.[384] Nowhere is the need for such rationalisation more apparent than at unstable coastlines. The fluctuations in entitlements produced by a shifting normal baseline are precisely the sort of complexity that straight baselines were intended to resolve. In fact, with the introduction of the EEZ, the continental shelf, and a 12 nm territorial sea, the need to simplify entitlements generated by indented coastlines and fringing islands has reduced since the degree of complexity produced by such coasts in the spatial distribution of maritime zones diminishes with an increase in the width of claimed waters.[385] However the need to render intelligible claims generated by shifting coasts will only magnify under the looming threat of sea-level rise. An interpretation of Article 7(2) in light of the object and purpose of the LOSC would require it to be read as an independent ground for drawing straight baselines. To construe it as conditional on Article 7(1) significantly

[380] Avena 48; US-Shrimp 42; Belgium v. Senegal 449; Whaling in the Antarctic 251; Somalia v. Kenya (2017) 29-30; Qatar v. UAE 27-8; ILC Commentary (n 35) 221; Linderfalk (n 38) 204; Thirlway (n 38) 1262; Gardiner (n 35) 211, 220-221; Hollis (n 47) 647-8.

[381] Prescott & Schofield (n 266) 142.

[382] UN Baselines Study (n 241) 18.

[383] Anglo-Norwegian Fisheries 130.

[384] O'Connell (n 195) 218; Trümpler (n 368) 75; Roach & Smith (n 369) 59; Prescott & Schofield (n 266) 142.

[385] UN Baselines Study (n 241) 18.

inhibits the ability of the provision to resolve complex patterns of entitlements for precisely those coastlines that will, in coming years, need such rationalisation the most.

Further, though state practice applying Article 7(2) is almost negligible at present, the practice of drawing straight baselines by polar states on constantly shifting glacial coasts in Antarctica and the Arctic can, ostensibly, only be justified under this provision.[386] That such baselines are used in the absence of deeply-indented coasts or fringing islands does offer support to the interpretation forwarded by this section. Egypt's use of straight baselines on a delta with a smooth coast and lacking fringing islands also offers similar support.[387] These instances of practice have largely been acquiesced in by states, with the notable exception of the United States.[388]

Article 7(2)'s status as an independent ground for straight baselines is also reinforced by other relevant rules of international law that must be considered in an interpretive process as per Article 31(3)(c) VCLT. The United Nations Framework Convention on Climate Change requires parties to 'take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects'.[389] It also recognizes the need to '[c]ooperate in preparing for adaptation to the impacts of climate change'.[390] The Cancun Adaptation Framework, adopted in 2010 by the UNFCCC's conference of parties, requires states 'to enable and support the implementation of adaptation actions aimed at reducing vulnerability and building resilience'.[391] The Paris Agreement, likewise, establishes as a global goal 'enhancing

[386] Rothwell, 'Antarctic Baselines' in Elferink and Rothwell (eds), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (2001) 49–68; Scovazzi, 'The Baseline of the Territorial Sea' in Elferink and Rothwell (n 386) 69–84; Schofield & Sas (n 286) 322.

[387] Árnadóttir (n 133) 19.

[388] Scovazzi (n 386) 83-84.

[389] Article 3(3) UNFCCC.

[390] Article 4(1)(e) UNFCCC.

[391] ¶11, The Cancun Agreements FCCC/CP/2010/7/Add.1 (2011).

adaptive capacity, strengthening resilience and reducing vulnerability to climate change'.[392] These near universally-ratified instruments indicate that international law supports efforts that enhance climate change resilience and preserve the socio-economic interests of threatened coastal states. Collectively, these instruments favour a reading of Article 7(2) that permits coastal states to use straight baselines on coasts affected by sea-level rise, thereby stabilising their claims to resources present in maritime entitlements measured from such baselines. It is important to note that international law does not mandate that all parties to the treaty under interpretation be parties to the treaty from which a relevant rule is employed for interpretive purposes.[393]

The interpretation advanced by this section can also be confirmed through recourse to the preparatory work of the LOSC.[394] Article 7(2) originated from a proposal by the Bangladeshi delegation, which observed that:

> …the Ganges delta had no stable low-water line and its navigable channels were continually changing. The only feasible method of demarcation of the landward and seaward areas was a baseline expressed in terms of a certain depth. The present method of determining the baselines, set forth in articles 3 and 4 of the 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone, did not take account of the geographical peculiarities of the coastline in States such as his own. The provisions of the new convention dealing with the drawing of baselines should, therefore, take account of such geographical and hydrographical peculiarities of the coastal States as had legal relevance.[395]

From the very beginning, Bangladesh was dissatisfied with how basepoints were constructed for deltas and sought a novel method of fashioning baselines for such unstable coasts; it did not seek a provision to stabilise existing basepoints drawn on deeply-indented coasts or fringing

[392] Article 7(1) Paris Agreement.

[393] Iron Rhine Arbitration 28; Mutual Assistance in Criminal Matters 219; US-Shrimp 48-50; EC-Large Civil Aircraft 362; Merkouris (n 60) 47. However, for the contrary view, see: EC-Biotech Products 333-335; Vattenfall v. Germany 49; Linderfalk (n 38) 178.

[394] Article 32 VCLT.

[395] Official Records of UNCLOS III, Volume II A/Conf.62/C.2/SR.5 (2009) 109.

islands.[396] This led to the submission of an informal position paper by Bangladesh, in which it urged a new formulation for the provision on straight baselines:

> The localities where the coast line is deeply indented and cut into or if there is a fringe of islands along the coast in its immediate vicinity or *if the water adjacent to the coast is marked by continual process of alluvion and sedimentation creating a highly unstable low water line* the method of straight baselines joining appropriate points on the coasts *or on the coastal waters* may be employed in drawing the baseline from which the breadth of territorial sea is measured [emphasis in original].[397]

Thus, the original proposal for this provision intended to create alternate conditions for the use of straight baselines; the instability of the low water line was placed in disjunction to the indentation of the coastline and the presence of fringing islands. At the sixth and seventh sessions, Bangladesh also introduced amendments to the article that further reiterated its intention to seek a new method of drawing straight baselines.[398] This was also reflected in the Main Trends Working Paper of the second committee, which described the use of straight baselines for 'localities where no stable low-water line exists' in Provision 9 as an alternative to their more typical use for indented coastlines and fringing islands in Provision 5.[399] The first Informal Single Negotiating Text lends additional support to the independent character of Article 7(2), as its provision on straight baselines stated:

> In localities where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity, the method of straight baselines joining appropriate points may be employed in drawing the baseline from which the breadth of the territorial sea is measured. Where because of the presence of a delta or other natural conditions the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line and, notwithstanding subsequent regression of the low-water line, such baselines shall remain effective until changed by the coastal State in accordance with the present Convention.[400]

[396] This is evinced, for instance, by their novel proposal to draw unanchored baselines employing the depth-method. See: Official Records of UNCLOS III, Volume I A/Conf.62/SR.27 (2009) 102.

[397] Nandan & Rosenne (n 70) 97.

[398] Ibid 99.

[399] Official Records of UNCLOS III, Volume III A/Conf.62/L.8/ Rev.1 (2009) 110.

[400] Official Records of UNCLOS III, Volume IV A/Conf.62/WP.8/ PartII (2009) 153.

This formulation, though similar to the final arrangement of Article 7, assists us in overcoming the concerns about the structure of the provision. The concept of highly unstable coastlines was intended to be a part of the prefatory provision on straight baselines, i.e. the first clause of Article 7. As such, it would have been one of the grounds for drawing straight baselines, unencumbered by the conditions it appeared beside. By inhabiting the first paragraph, the use of the words 'under Paragraph 1' in clause 5 would no longer have served as an obstacle to the independent character of the provision on unstable coasts, nor would the words 'appropriate points' inhibit its ability to use basepoints other than those selected for indented coastlines and fringing islands. The aforesaid text lends support to Trümpler's alternate reading of this phrase:

> …it has been argued that the French phrase 'les points appropries' and the English equivalent 'the appropriate points' in the second sentence of the ISNT directly refer to the same phrase in the first sentence, indicating that only the points referred to in the first sentence may be used, and that consequently Art. 7 (2) is subject to Art. 7 (1). This is not a necessary conclusion. The reference 'appropriate points' might also indicate that such appropriate points exist where the coastline is highly unstable.[401]

Although the final draft of the provision was revised to separate the two clauses, carving out what is now Article 7(2), this was done purely for aesthetic purposes, since the first clause proved to be too lengthy.[402] This amendment was not intended to change the meaning of the provision in any tangible way.[403] Unfortunately, however, the residual portions of Article 7 were not revised to reflect this modification: that the phrases 'under paragraph 1' and 'appropriate basepoints' persist in the final treaty text is, as McDonald and Prescott describe, 'a poor choice of words', rather than a reflection of the drafters' intention to unnecessarily restrict the applicability of Article 7(2).[404] This is what led the ILA's Baselines Committee to determine, in its Sydney Report: 'that Article 7(2) is to be read independently, and not

[401] Trümpler (n 368) 76.

[402] McDonald & Prescott, 'Baselines along Unstable Coasts' 8(1) Ocean Yearbook (1989) 70, 73.

[403] Ibid.

[404] Ibid 80.

cumulatively, with Article 7(1)…the historic basis for this provision is separate and distinctive from the criteria outlined in Article 7(1)'.[405]

It would, in conclusion, be critical to note that if Article 7(2) were read as subordinate to 7(1), this would nullify the purpose for which it was created: to carve out a new method of constructing baselines for deltas and other unstable coasts, to meet concerns raised by states such as Bangladesh and Vietnam. As Busch and Hoque point out, if an unstable coast is required by the provision to be indented or fringed by islands, what, then, is the utility of Article 7(2)?[406] A coastal state could already draw straight baselines under such conditions using 7(1). Therefore, it is suggested that the correct interpretation of Article 7(2) requires it to be read as autonomous from 7(1).

### B. 'Delta and Other Natural Conditions'

The next hurdle that Article 7(2) encounters in its path for applicability to situations of sea-level rise is that its text describes the conditions for its invocation as those where 'because of the presence of a delta and other natural conditions the coastline is highly unstable'.[407] The use of the conjunctive 'and' to interpolate 'delta' with 'other natural conditions' has been employed to argue that the two are cumulative requirements which must both be satisfied in order to draw a straight baseline through this provision.[408] As a result, the provision would only apply to instability produced at the mouths of river deltas, having very limited general applicability to circumstances of geographic change produced by anthropogenic sea-level rise. Yet, an

[405] ILA (n 364) 163.

[406] Busch (n 133) 181; Hoque (n 246) 76.

[407] Article 7(2) LOSC.

[408] Freestone & Pethick (n 19) 74-5; UN Baselines Study (n 241) 24; Stoutenburg (n 246) 133; Aurescu & Oral (n 21) 29; Busch, 'Law of the Sea Responses to Sea-Level Rise' in Johansen et al (eds), *The Law of the Sea and Climate Change* (2021) 328-330; Churchill, Lowe & Sander (n 131) 72.

interpretation of Article 7(2) applying the crucible approach reveals that this reading of the treaty text can be challenged.

Although not usually the first step in an interpretive exercise, it is necessary to commence the discussion here with the preparatory work of the LOSC, since it is the root cause for the controversy around this provision. The drafting history of Article 7(2) offers a complicated puzzle. The original wording of the provision in the informal single negotiating text carried a disjunctive between the two phrases, as follows:

> Where because of the presence of a delta or other natural conditions the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line and, notwithstanding subsequent regression of the low-water line, such baselines shall remain effective until changed by the coastal State in accordance with the present Convention.[409]

However, when the article underwent revision, the 'or' was changed to 'and' without discussion or explanation.[410] What proves intriguing, however, is that the Russian version of the final treaty text still retains the original disjunctive, describing 'delta' and 'other natural conditions' as alternatives.[411] Both the Russian and English texts are equally authentic.[412] To resolve this apparent contradiction, therefore, we must reconcile the meaning of the texts through the general rules of treaty interpretation.[413]

The ordinary meaning of 'and' is not as simple as one might believe. The Oxford English Dictionary defines it as '[i]ntroducing a word, phrase, clause, or sentence, which is to be taken side by side with, along with, or in addition to, that which precedes it'.[414] While one of its meanings is conjunction, there are situations where it is simply a connective word that does not

[409] Official Records of UNCLOS III, Volume IV A/Conf.62/WP.8/PartII (2009) 153.

[410] Nandan & Rosenne (n 70) 99; McDonald & Prescott (n 402) 79.

[411] Trümpler (n 368) 77; McDonald & Prescott (n 402) 79-80.

[412] Article 320 LOSC.

[413] Article 33(4) VCLT.

[414] "And, conj.." in OED Online (n 3).

imply cumulation. The South China Sea Award noted that, on occasion, the conjunctive 'and' and the disjunctive 'or' can be used interchangeably if demanded by their context,[415] an occurrence that arises routinely in domestic decisions.[416] As Dickerson explains, the phrases 'and' and 'or', though often interpreted in a single fashion, are not without their own intrinsic ambiguity:

> The difference between "and" and "or" is usually explained by saying that "and" stands for the conjunctive, connective, or additive and "or" for the disjunctive or alternative. The former connotes "togetherness" and the latter tells you to "take your pick". So much is clear. Beyond this point, difficulties arise. One difficulty is that each of these two words is on some occasions ambiguous. Thus, it is not always clear whether the writer intends the inclusive "or" (A or B, or both) or the exclusive "or" (A or B, but not both). This long recognized uncertainty has given rise to the abortive attempt to develop "and/or" as an acceptable English equivalent to the Latin "vel" (the inclusive "or"). What has not been so well recognized is that there is a corresponding, though less frequent, uncertainty in the use of "and". Thus, it is not always clear whether the writer intends the several "and" (A and B, jointly or severally) or the joint "and" (A and B, jointly but not severally).[417]

The text of Article 7(2) can, therefore, be understood in two ways: the first, that it describes two joint conditions: a 'delta' (requirement 1) and 'other natural conditions' (requirement 2), or second, that it is to be read collectively as 'delta and other natural conditions', a class of natural conditions that cause coastal instability, each element of which can be used severally to invoke Article 7(2). Under the second interpretation, the specific mention of 'delta' only serves as an illustration of the class, laid out explicitly due to the context in which the provision arose. Crucially, for the second interpretation, the use of the conjunctive 'and' or the disjunctive 'or' is immaterial – either connecting word leads to the very same meaning of the treaty text. As a result of the latter reading, therefore, the different language versions of the treaty texts can be reconciled. Moreover, this reading also best explains the sudden change in the informal single negotiating text, as well as the apparent lack of concern

[415] South China Sea 209.

[416] See, for instance: R v. Oakes; Surrey Quarter Sessions, exp. Commissioner; Uddin v. Associated Portland Cement Manufacturers Ltd; Ishwar Singh Bindra v. State of UP; Federal Steam Navigation Co. Ltd. v. Department of Trade and Industry; R.S. Nayak v. A.R. Antulay; Encino Motorcars v. Navarro.

[417] Dickerson, 'The Difficult Choice Between "And" and "Or"' (1960) Articles by Maurer Faculty 310.

exhibited by the drafters of the treaty for a glaring contradiction in the Russian and English versions of its text. If they understood the words 'delta and other natural conditions' as a collective class rather than cumulative requirements, both the change in the draft's language and the seeming contradiction between the texts become inconsequential. Indeed, as Prescott and Schofield point out, the trigger for the invocation of Article 7(2) isn't found in the phrase 'delta and other natural conditions' at all; rather, the trigger is the presence of a 'highly unstable' coast, the crux of the provision.[418] What causes such instability ought not to matter.

Such a reading of the provision's text also makes it efficacious, and accords with the ut res principle, an aspect of good faith interpretation. As discussed above, the purpose of Article 7(2) was to introduce a new provision to enable the construction of straight baselines, as a result of the Bangladeshi proposal. If the concern for the drafters was the instability produced by a shifting normal baseline due to river deltas, it seems unnecessarily convoluted to add a second requirement of 'other natural conditions' that must also be satisfied in order to invoke this provision – with this additional cumulative requirement, coastal change produced purely by deltaic conditions, as were present in the Ganges delta in Bangladesh, would be insufficient to invoke Article 7(2).[419] Indeed, one would require an additional mysterious 'other natural condition' to also contribute to coastline erosion to construct a straight baseline. Not only does this significantly reduce the efficacy of the provision, it does so for no fathomable justification.

As McDonald and Prescott argue, it seems far more likely that the phrase 'other natural conditions' was added to the provision to widen its applicability so it could be invoked in a broader set of cases of coastal change, in order to garner the support of a greater number of interested states for its adoption at UNCLOS III,[420] rather than to unnecessarily narrow it down

[418] Prescott and Schofield (n 266) 154; Busch (n 133) 183.

[419] McDonald & Prescott (n 402) 79; Stoutenburg (n 246) 133.

[420] McDonald & Prescott (n 402) 79.

to an almost impracticable scope, to be used only be a few deltaic states. This reading also better suits the object and purpose of the LOSC: if the drafters of the provision were concerned with instability of the normal baseline produced by deltas and wished to provide a stabilisation mechanism through the use of straight baselines, why would they not wish to extend this benefit to other similar coastlines that also undergo this very process of coastal change.[421] Moreover, as noted above, while state practice applying this provision is almost negligible at present, the practice of drawing straight baselines by polar states on constantly shifting glacial coasts can only be justified under this provision.[422] Such baselines have largely been acquiesced in by states, with the notable exception of the United States.[423] That they are used in the absence of river deltas does offer support to the interpretation put forth in this section. Other relevant rules of international law, discussed in the preceding section, also apply with equal strength here, favouring a reading of Article 7(2) that permits coastal states to use straight baselines on coasts affected by sea-level rise without the cumulative requirement of a river delta. Therefore, the phrase 'delta and other natural conditions' in Article 7(2) ought to be read as laying down a class of disjunctive natural conditions that cause coastal instability, any one of which is sufficient to enable the construction of straight baselines.

Admittedly, one might note here that, as per the decision in Qatar v. Bahrain, the terms of Article 7 are to be construed restrictively.[424] Therefore it might be argued that the interpretation advanced by these sections contradicts the approach adopted by the ICJ in that case. However, the Court offered no reasoning there to justify its conclusion. There is, in truth, no legal ground to mandate a restrictive interpretation of Article 7. The text of the treaty does

[421] Busch (n 133) 183-4.

[422] Rothwell (n 386) 49–68; Scovazzi (n 386) 69–84; Schofield & Sas (n 286) 322.

[423] Scovazzi (n 386) 83-84.

[424] Qatar v. Bahrain 103. See also: Alleged Violations of Sovereign Rights 84.

not require a narrow reading of the terms. The object and purpose of the LOSC warrants a reading of Article 7 that permits rationalizing the spatial configuration of entitlements. A good faith reading of the provision requires it to be read in a fashion that renders it more effective and not less. Finally, state practice, which plays a pivotal role in shaping the normative content of treaty terms,[425] overwhelmingly suggests that Article 7 is to be read liberally.

The application of Article 7(1) has led to highly divergent practice that tests the language of the provision and, in many cases, surpasses it.[426] According to the ILA's Baselines Committee, of the 150 coastal states that exist, 90 have drawn straight baselines – a number that far exceeds the exceptional status such baselines are intended to bear according to the ICJ.[427] Many others have passed legislation enabling them to construct straight baselines, disclosing a belief that part of their coastlines may be eligible to meet the requirements of Article 7.[428] The practice of such states in their interpretation and application of Article 7 is highly diverse.[429] Indeed, the variance in practice is so great that Prescott & Schofield conclude

> …it would be possible for most countries to draw straight baselines along some or all of their coastlines. Nor would such countries need to invent new interpretations of terms in Article 7, because existing baselines provide all the justifications in terms of state practice and precedents that any country could need.[430]

Yet, almost none of these differing applications of the rules on straight baselines have drawn widespread or concordant protests; indeed, other than the United States – which, notably isn't a party to the LOSC – no state has consistently objected to the liberal interpretation accorded

[425] See: Article 31(3)(b) VCLT. See also: Linderfalk (n 38) 167; Thirlway (n 38) 1271-2; Gardiner (n 35) 256; ILC (n 52) 79.

[426] Prescott & Schofield (n 266) 143; Reisman & Westerman, *Straight Baselines in International Maritime Boundary Delimitation* (1992) 196; Lowe & Tzanakopoulos, 'The Development of the Law of the Sea by the International Court of Justice' in Tams & Sload (eds), *The Development of International Law by the International Court of Justice* (2013) 190.

[427] ILA (n 364) 71.

[428] Ibid.

[429] See, generally: Roach & Smith (n 369).

[430] Prescott & Schofield (n 266) 142.

to the terms of Article 7.[431] Through the construction of straight baselines that stretch the meaning of Article 7, and through widespread acquiescence to such application,[432] state practice suggests that the rules on straight baselines are to be construed in a permissive fashion.

There are two further points to note regarding the statement in Qatar v. Bahrain. First, it was explicitly directed at the terms of Article 7(1), and does not necessarily inhibit the interpretation of Article 7(2) advanced above. Second, when the Court observed that Article 7(1) was to be interpreted 'restrictively', it meant that straight baselines should only be applied exceptionally where the rules on normal baselines would produce a complex distribution of maritime space. In that case, Bahrain's coast was smooth and dotted by a small number of islands, prompting the Court to conclude that there was no need for the use of straight baselines. The interpretation of Article 7(2) advanced above accords with the Court's objective, since it only advocates for the use of straight baselines in circumstances where the coastline is highly unstable due to sea-level rise, rendering the use of a normal baseline difficult. Therefore, coastal instability produced by sea-level rise should be considered a ground for the construction of straight baselines under Article 7(2). The degree of coastal instability required for such construction will be examined next.

### C. Evaluating a 'Highly Unstable' Coastline

A final, albeit less significant concern raised in the context of applying Article 7(2) to sea-level rise is that, even when read as an independent ground for straight baselines, the provision should not apply to all forms of coastal change. Rather, its text and drafting history suggest that

[431] Ibid 147.

[432] Acquiescence is defined as 'tacit recognition manifested by unilateral conduct which the other party may interpret as consent…[i]f the circumstances are such that the conduct of the other State calls for a response, within a reasonable period, the absence of a reaction may amount to acquiescence': Somalia v. Kenya (2021) 22-23.

it can only be employed for 'highly unstable' coastlines, a threshold that must be given full weight. As Stoutenburg argues:

> Even if Art 7 (2) UNCLOS provided for stable straight baselines in its area of application, it is moreover doubtful that its rule could be extended to cover situations of sea level rise. It has been argued that Art 7 (2) UNCLOS should not only apply to deltaic coastlines but also to other highly unstable coasts where no river delta is present…it has been noted that the reference to "highly unstable" coastlines in Art 7(2) UNCLOS alludes to unusually instable coasts exhibiting a much greater variability than other coasts. The fact that sea level rise will affect all coasts, albeit to varying degrees, thus prevents the application of the provision to all situations of land loss due to rising sea levels.[433]

Since the provision arose in the context of the Ganges/Brahmaputra delta in Bangladesh, it is sometimes suggested that only instability of the nature found in that environment can trigger a resort to Article 7(2). Trümpler contends that 'Art. 7(2) was intended for use at the Ganges/Brahmaputra delta [where] tidal forces, monsoons and storms can rapidly create and destroy islands and coastal features. This indicates that Art. 7(2) was probably not intended for any changing environment, especially since most coastlines constantly change'.[434] Yet, the use of straight baselines by Egypt on the Nile delta,[435] by Russia on the Lena delta,[436] by Guinea-Bissau on the Arquipelago dos Bijagos delta,[437] and by polar states on ice-covered shores,[438] where coastal change is far less frequent and of a much lower magnitude, rejects the application of such a high standard.[439] Scholarship suggests that the provision is also apt for the coasts of Myanmar, Nigeria, France, Spain, USA, Venezuela and Vietnam, which also insinuates a lower threshold for 'highly unstable' than that put forth above.[440] Some have tried to estimate that

[433] Stoutenburg (n 246) 133.

[434] Trümpler (n 368) 77.

[435] Árnadóttir (n 133) 19.

[436] Prescott and Schofield (n 266) 151

[437] Ibid..

[438] Rothwell (n 386); Scovazzi (n 386); Schofield and Sas (n 286).

[439] Although the United States does challenge Egypt's deltaic baseline, it does so on the ground that there is no indentation or fringe of islands, not on the ground that the coastline is insufficiently stable. See: Churchill, Lowe & Sander (n 131) 72.

[440] ILA (n 364) 74; Busch (n 133) 180.

annual coastal fluctuations of 10 metres ought to be the base minimum for the use of this provision, though the legal weight of such a precise mathematical formulation is certainly suspect.[441] What can be concluded, however, is that reading the provision in such a narrow, constricted form would unnecessarily inhibit its efficacy. As Bird points out, it seems more reasonable to construe Article 7(2) as laying down a relative test – while it might not be applicable to every coastline that undergoes coastal change, even in the context of sea-level rise, it will apply to those that suffer the more acute effects of this phenomenon.[442] The more broadly one construes such effects, the greater the efficacy afforded to this provision. Yet, to estimate precisely how severe the coastal changes must be to invoke this provision is a futile task at present – the normative content of this phrase will only crystallise through a 'thickening of state practice' that seeks to apply this provision in coming years.[443] For now, it is sufficient to note that Article 7(2) can be employed by threatened coastal states in the context of sea-level rise, and that the threshold for the application of this provision will be moulded by the practice of such states.

### II. The Obligation to Revise Straight Baselines

The previous section supported the construction of straight baselines at unstable coasts, offering coastal states a tool to counter sea-level rise and the ensuing loss of entitlements. This tool, however, is not infallible. Like the normal baseline, the straight baseline, too, is subject to revision if met with coastal change of a sufficient degree. This much is implied by the terms 'until changed by the coastal State in accordance with this Convention' in Article 7(2), a condition that, as argued in Chapter 2, most scholarship reads as obligatory rather than

[441] McDonald & Prescott (n 402) 81.

[442] Bird, *Coastline Changes: A Global Review* (1985) 158.

[443] Rothwell, 'The Impact of State Practice on the Jurisdictional Framework contained in the LOS Convention: A Commentary' in Elferink (ed), *Stability and Change in the Law of the Sea* (2005) 145.

discretionary.[444] This section will examine the trigger for this obligation of revision [**A**], and methods by which it may be deferred [**B**].

### A. Appreciable Departure and the General Direction of the Coast

When geographic change is such that the two points at which the straight baseline is intended to meet the coast no longer adhere to the low-water mark, the baseline must be revised. Such geographic change serves as a catalyst for the obligation of revision. However, Article 7(2) permits a coastal state to delay this revision for straight baselines drawn on unstable coasts, providing that 'notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective'.[445] Yet, this is not a permanent respite. Eventually, a revision is expected in accordance with the terms of the Convention. When, precisely, this suspended obligation is triggered, however, remains ambiguous. The answer may lie in Article 7(3) LOSC, which provides:

> The drawing of straight baselines must not depart to any appreciable extent from the general direction of the coast, and the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters.[446]

In particular, the requirement that a straight baseline must coincide with the 'general direction of the coast' offers a clear standard against which coastal change may be measured to evaluate the ongoing validity of a straight baseline. When an unanchored baseline, preserved as per the terms of Article 7(2), no longer satisfies this threshold, the deferred obligation to revise such baseline is activated.[447] Indeed, even whilst observing the flexibility afforded to coastal states

[444] Soons (n 19) 220; Hoque (n 246) 73; Stoutenburg (n 246) 132; Busch (n 133) 185; Churchill, Lowe & Sander (n 131) 103.

[445] Article 7(2) LOSC.

[446] Article 7(3) LOSC.

[447] Busch (n 133) 186.

by straight baselines, the ICJ noted, in the Anglo-Norwegian Fisheries case, that there was one criterion that they must always obey:

> Among these considerations, some reference must be made to the close dependence of the territorial sea upon the land domain. It is the land which confers upon the coastal State a right to the waters off its coasts. It follows that while such a State must be allowed the latitude necessary in order to be able to adapt its delimitation to practical needs and local requirements, the drawing of baselines must not depart to any appreciable extent from the general direction of the coast.[448]

Tanaka detects that this quote from the judgment 'seems to imply that the general direction of the coast provides the principle governing the baseline; and that the straight baseline method is a result of the application of this principle'.[449] Busch, too, suggests that:

> Article 7(3) may provide some direction as to *when* baselines under Article 7(2) should be changed. Paragraph 3 is one of four paragraphs in Article 7 that places conditions for the construction of baselines and provides that "[t]he drawing of straight baselines must not depart to any appreciable extent from the general direction of the coast"… reading Article 7(3) in connection with paragraph 2, it can be argued that, when a coastline has changed dramatically, and the delta baseline departs to an appreciable extent from the general direction of the coast, the coastal State should adjust its delta baseline to be in conformity with the LOSC.[450]

The ILA's Baselines Committee accepts this benchmark for evaluating a straight baseline's validity in circumstances of coastal change, but suggests some degree of flexibility in ascertaining when a departure from this direction is sufficient to warrant revision:

> The Committee also notes the potential difficulties that may arise from a strict application of Article 7(3) to the circumstances outlined in Article 7(2) in that a highly unstable coastline may be one in which determining the general direction of the coast may present significant challenges. In that respect, the Committee notes that the "general direction" criterion in Article 7(3), recognised by the Court in Fisheries as devoid of any mathematical precision, is qualified by the words "to any appreciable extent" which would permit a margin of appreciation for a coastal State seeking to draw straight baselines along a highly unstable coastline.[451]

What, then, is the 'general direction' of a coast, and how precisely can one calculate an appreciable departure from it? The ICJ observed that this rule is 'devoid of any mathematical precision' but noted that it was not appropriate to glean departure from such direction by

[448] Anglo-Norwegian Fisheries 133.

[449] Tanaka (n 31) 49.

[450] Busch (n 133) 186 [emphasis in original].

[451] ILA (n 364) 118.

examining only one sector of the coast, nor through the impression gathered from large-scale charts.[452] Churchill & Brown suggest making this assessment by focusing on the remoteness of the area of internal waters generated by a straight baseline.[453] The United Nations Baselines Study concludes that the threshold is met when it becomes clear that the low-water line has 'significantly and permanently' retreated from the position used to construct the baseline[454] – though this phrasing is, perhaps, just as uncertain as that found in Article 7(3).

Others have sought to adopt a more formulaic approach to this test. Beazley, Roach & Smith suggest the use of 'reference lines' of a definite length, drawn along the coast being considered, against which the angle of the straight baseline ought to be measured to assess an appreciable departure.[455] The United States applies this approach, placing an absolute permissible cap on deviation at twenty degrees from the reference line, though this number certainly has no foundation in law.[456] Reisman & Westerman suggest the construction of a simplified baseline using the arcs-of-circles method, with the breadth of the territorial sea as the radius, that ought to be compared directly with the coastline.[457] Prescott suggests the use of an index system based on a ratio of the areas of seas enclosed with the length of the baseline, such that a larger fraction signals a greater deviation from the general direction of the coast.[458]

None of these methods can be binding under law: as the ICJ indicated in the Anglo-Norwegian Fisheries case, appreciable departure must be assessed subjectively, on a case by

[452] Anglo-Norwegian Fisheries 142.

[453] Brown & Churchill, *The UN Convention on the Law of the Sea: Impact and Implementation* (1987) 307-8.

[454] UN Baselines Study (n 241) 24.

[455] Beazley, *Maritime Limits and Baselines: A Guide to Their Delineation* (1987) 14; Roach & Smith (n 369) 64.

[456] Trümpler (n 368) 78.

[457] Reisman & Westerman (n 426) 97.

[458] Prescott, *The Maritime Political Boundaries of the World* (1985) 68-9.

case basis, since it is not a mathematical concept.[459] However, these methods do offer pragmatic ways to assess deviation for particular baseline segments, as part of this subjective exercise. By considering the degree deviation produced by Beasley's reference lines, or the index numbers calculated through Prescott's ratios, a uniform standard can be introduced to measure the extent by which a straight baseline segment departs from the coast. Ultimately, whether such departure finally meets the threshold of being 'appreciable', thereby demanding revision of the baseline, will have to be shaped by practice, since there are insufficient instances of use at present to provide clear meaning to the terms of Article 7(3). Nonetheless, as noted by the ICJ, this can never be a purely objective assessment, and there will be circumstances that coastal states can leverage to evade the charge of an 'appreciable departure', employing the 'margin of appreciation' referred to by the ILA's Baselines Committee. These will be considered next.

### B. Deferring the Obligation to Revise

Though Article 7(2) constitutes the primary instrument through which the revision of straight baselines may be delayed, there are some others that also warrant brief consideration. The first is found in Article 7(3), the source of the obligation of revision. The provision links the requirement that there ought not to be appreciable departure from the coast with a descriptive element: that 'the sea areas lying within the lines must be sufficiently closely linked to the land domain to be subject to the regime of internal waters'.[460]

The requirement that the waters be 'sufficiently closely linked to the land' offers an alternate description of what constitutes an appreciable departure from the direction of the coast. Yet, it also hints that this assessment of appreciable departure is not a purely objective

[459] Anglo-Norwegian Fisheries 142.

[460] Article 7(3) LOSC.

test based on geographic factors. The ICJ has noted that the question is not merely whether the concerned features from which the baseline is drawn are part of the geographical configuration of the coast.[461] Rather, it is whether they form an integral part of the coastal configuration, an assessment that carries a subjective element.[462] As Reisman & Westerman argue, a claimant can meet the 'sufficiently closely linked' test by also establishing 'that there is a strong historic interrelationship between the waters and the land',[463] demonstrated through prolonged treatment of the sea areas as internal waters. In the context of sea-level rise, this will be a simple point to prove for threatened coastal states that suffer a movement of their shorelines, since the areas under revision would have, prior to the change, served as internal waters. As such, their historic link with the land domain ought to carry some weight in the subjective appreciation of whether an appreciable departure from the coast has occurred.

The question of a 'sufficiently close link' and historic usage ties in well with another element of Article 7 – that of paragraph 5, which states: 'Where the method of straight baselines is applicable under paragraph 1, account may be taken, in determining particular baselines, of economic interests peculiar to the region concerned, the reality and the importance of which are clearly evidenced by long usage'.[464] This requirement, originally articulated by the ICJ in the Anglo-Norwegian Fisheries case,[465] has always perplexed scholars. Historic usage, by itself, is not a ground for drawing a straight baseline, as the ICJ made clear, but it is still meant to contribute to the final form that a straight baseline takes.[466] How precisely it is to do so, however, nobody has managed to fathom. At best, one can conclude as O'Connell does, that

[461] Alleged Violations of Sovereign Rights 87.

[462] Ibid.

[463] Reisman & Westerman (n 426) 99-100; Roach & Smith (n 369) 65-66.

[464] Article 7(5) LOSC.

[465] Anglo-Norwegian Fisheries (n 17) 133.

[466] Fitzmaurice, 'Some Results of the Geneva Convention on the Law of the Sea' 8 ICLQ (1959) 73; UN Baselines Study (n 241) 25; Prescott & Schofield (n 266) 160.

the rules on straight baselines are to be more liberally applied in situations where a state has historic economic dependency on the waters in question.[467] Sea-level rise provides a perfect illustration of where 'economic interests' can be factored in to play such a role. For threatened states with an established history of utilising resources in areas measured from their straight baselines, such practise ought to weigh in favour of retention of the unanchored straight baseline, delaying the obligation of revision. Menefee offers an illustration of how this might work:

> Additionally, for cases in which some fringing islands disappeared, but others remained, Article 7(5)'s statement that "account may be taken, in determining particular baselines, of economic interests peculiar to the region concerned, the reality and the importance of which are clearly evidenced by long usage," arguably provides for retention of baselines connecting certain points overtaken by sea level rise. Significant rise, however, could deprive a state from the right of using straight baselines, and force them back to the normal baselines of Article 5.[468]

An additional provision that requires reflection is Article 7(4), which permits straight baselines to be drawn from low-tide elevations that have installations constructed on them, or that have received general international recognition.[469] Where the points connecting the straight baseline to the coast have been partially submerged as a consequence of sea-level rise, but are yet above water at low-tide, this offers a useful tool in the retention of the straight baseline. As Schofield and Freestone point out, it also permits an unanchored straight baseline to be redrawn to an offshore low-tide elevation, through the construction of a permanent installation on it.[470] Moreover, if the straight baseline is long-established and the points suffering submersion are its original endpoints, the costs of building additional installations may be avoided; instead, the route of general international recognition can be adopted. Prescott and Schofield infer that the recognition spoken of in this provision cannot be active recognition, since the

[467] O'Connell (n 195) 206.

[468] Menefee (n 363) 207.

[469] Article 7(4) LOSC.

[470] Schofield & Freestone (n 167) 141-165.

acknowledgement of low tide elevations is hardly a concern significant enough for states to explicitly take note of them;[471] rather, the recognition spoken of is a passive acquiescence, which ought to be available in a fairly straightforward fashion for straight baselines of long standing.

Finally, the publicity requirements for straight baselines can also be strategically employed to render it particularly difficult to challenge the baselines fashioned by a state. As Article 16 LOSC notes:

> The baselines for measuring the breadth of the territorial sea determined in accordance with articles 7, 9 and 10, *or the limits derived therefrom*, and the lines of delimitation drawn in accordance with articles 12 and 15 shall be shown on charts of a scale or scales adequate for ascertaining their position. Alternatively, a list of geographical coordinates of points, specifying the geodetic datum, may be substituted [emphasis added].[472]

Crucially, it isn't the actual location of the baseline itself that must be disclosed through charts; instead, states have the option to publish only the entitlement limits derived from such baseline. If the latter route is elected, the possibility of contesting a straight baseline significantly diminishes, since a third state would have to reverse-engineer the dividing line between the coastal state's internal waters and territorial sea, working backwards from the limits provided, at considerable difficulty and expense.[473] That coastal states carry discretion in the construction of a straight baseline and the selection of the coastal points to which it is anchored makes this exercise particularly complex. As most states would be unlikely to undertake this cumbersome exercise, a strategic application of Article 16 makes the possibility of acquiescence to an untethered baseline increasingly likely.

[471] Prescott & Schofield (n 266) 159.

[472] Article 16 LOSC.

[473] See discussion in: Tanaka (n 31) 49; Symmons & Reed (n 243) 77.

However, it must be acknowledged that each of the options discussed here carries finite utility in enhancing the resilience of a coastal state's maritime claims. When met with sea-level rise of a sufficient scale, the elbow-room offered by historic use of the waters enclosed by a straight baseline or economic dependence on its resources will not carry sufficient weight to defer the assessment of an appreciable departure from the coast. Equally, while the provision on low-tide elevations offers some respite in delaying the obligation of revision, the permanent inundation of such elevations caused by sea-level rise would force a coastal state to revise its baseline. Similarly, while the strategic use of Article 16 could mask minor coastal deviations from a constructed baseline to prompt acquiescence, it is not sufficient to veil the impacts of large-scale coastal retreat. These are vital yet fallible tools for bolstering the resilience of maritime claims to the effects of sea-level rise.

## Conclusion

This Chapter examined the utility of straight baselines in mitigating the impact of sea-level rise on entitlement limits, thereby enhancing their resilience. It began by outlining the benefits offered by straight baselines in the context of a retreating coast. While the normal baseline coheres to the coast for its entire length, the straight baseline is only fixed to the coast at its two endpoints. As a result, the latter category is less vulnerable to the threat of coastal retreat, since only geographic change at the endpoints can trigger an obligation of revision. This baseline is also easier to preserve through artificial measures and can often be revised by a straightforward linear extension of the endpoints, avoiding any palpable impact on the spatial configuration of a coastal state's entitlements. However, the most promising benefit offered by straight baselines was theorised to be their utility in deferring the obligation of revision for baselines drawn at highly-unstable coasts, as per Article 7(2) LOSC. It was argued that Article 7(2) could be applied directly to coastlines most vulnerable to sea-level rise to render the entitlements drawn from such shores more stable through two means: first, due to the intrinsic enhanced

resilience of straight baselines as they remain tethered to the coast at fewer points thereby decreasing their vulnerability; and second, due to the specific stipulation that such baselines would remain effective 'notwithstanding subsequent regression of the low-water line'.

Academic critiques levelled against such use of Article 7(2) in the context of sea-level rise were discussed next. The argument that Article 7(2) is subordinate to Article 7(1), such that straight baselines may only be drawn at highly unstable coastlines that also possess a 'deeply indented and cut into' coastline, or a 'fringe of islands', was addressed first. It was pointed out that such a reading of Article 7(2) rendered it ineffective, since a coastal state could already draw straight baselines relying solely on the indented coast or the fringe of islands, using Article 7(1), and would have no need to resort to Article 7(2). Moreover, to assess the existence of a deeply-indented coast or a fringe of islands with a constantly-fluctuating shoreline was postulated to be an impossible task, placing the validity of the baseline constructed on such a shore in a state of eternal flux. It was further demonstrated that a liberal reading of Article 7(2), which did not require a satisfaction of the criteria in Article 7(1), was better suited to the object and purpose of the LOSC and to other relevant rules of international law. This interpretation was confirmed through the preparatory work of the LOSC.

The next critique discussed in the application of Article 7(2) to situations of sea-level rise was that its text made it applicable only where **'**because of the presence of a delta and other natural conditions the coastline is highly unstable'. The use of the conjunctive 'and' to interpolate 'delta' with 'other natural conditions' had been relied on by scholars to argue that these two are cumulative requirements which must both be satisfied to draw a straight baseline. As a result, the provision would only apply to instability produced at the mouths of river deltas, having very limited general applicability to circumstances of sea-level rise. The section argued that the ordinary meaning of 'and' is not restricted to signifying conjunction and that it can, in certain circumstances, be interchanged with 'or'. That this is how the term is used in Article

7(2) was demonstrated through the preparatory work of the LOSC, and the Russian language version of the treaty text. It was further argued that, on a good faith reading, Article 7(2) refers to a collective class termed 'delta and other natural conditions' that produce coastal instability, any member of which is sufficient for the construction of straight baselines. This interpretation was shown to be the only one that gives the provision full effect, and that accords best with the object and purpose of the LOSC. The use of straight baselines by polar states on glacial coasts was noted as state practice that supports this disjunctive reading of Article 7(2).

The chapter then proceeded to outline the limitations that circumscribe the use of Article 7(2) in conditions of sea-level rise. It was acknowledged that the terms 'highly unstable' suggest that the provision is not intended to cover all scenarios of coastal instability, but only those that meet a minimum threshold of severity. Where, precisely, this threshold lies is currently unclear. State practice does seem to suggest that the threshold for severity in coastal change may not be very high. However, a 'thickening of state practice' that seeks to apply this provision in coming years will be necessary to provide greater clarity to the normative content of this phrase.

Next, it was acknowledged that Article 7(2) permits a coastal state to defer the obligation of revision due to geographic change through the phrase 'notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective until changed by the coastal State'. However, the use of the imperative 'until' rather than the discretionary 'unless' implies that the deference of this obligation of revision is only temporary. The precise trigger to revive this deferred obligation was postulated to lie in Article 7(3), which provides that a straight baseline must coincide with the 'general direction of the coast' and that the sea areas it encloses 'must be sufficiently closely linked to the land domain'. Although calculating an appreciable departure from the coast is a subjective exercise, some tools were outlined that could be employed to make this process more objective. It was further shown that,

by demonstrating historic use of the waters enclosed by the straight baseline, the coastal state may be able to argue in favour of such a 'sufficiently close link'. The possibility of revising straight baselines by connecting them to low-tide elevations was also discussed. Finally, the strategic use of Article 16 LOSC was identified as a final path available to coastal states to render their baselines less susceptible to challenge. However, each of these tools were recognised to offer finite utility. When met with sea-level rise of a sufficient scale, their application breaks down. As a result, it can be concluded that straight baselines offer significant promise in bolstering the resilience of maritime limits, but their efficacy is limited and they cannot evade revision when faced with significant coastal retreat.

# Chapter 4

# Coastal Fortification to Stabilise the Baseline

*Table of Contents*



## Introduction

Chapters 2 and 3 were concerned with legal interpretive tools that a coastal could employ to inhibit the ambulation of its baseline when faced with sea-level rise. They recommended the use of datum calculations to stabilise the normal baseline, and the use of straight baselines on retreating coasts to defer the obligation of revision. However, it was acknowledged that each of these tools carry finite limits beyond which their utility breaks down. In scenarios where such tools prove insufficient, however, the coastal state possesses an additional option to stabilise its baseline and the entitlement limits measured from it: the use of coastal fortification measures. This Chapter examines the legal justification for the use of fortification measures on the baseline, outlining their doctrinal and practical limitations.

The use of shoreline fortification to remodel the contours of the coast is hardly a novel innovation: the application of polders in the early 1600's permitted the municipalities of Beemster and Schermer to be coaxed out of wetlands, birthing the adage 'God created the

world, but the Dutch created the Netherlands';[474] the fashioning of embankments, flattening of hills and deposition of rubble on marsh turned seven tiny islets into the bustling city of Bombay at the turn of the 18th century;[475] and the Praya Reclamation Scheme permitted the British Empire to fabricate nearly 60 acres of land to bolster the Hong Kong shoreline in 1890.[476] The physical benefits of such construction activities may be readily apparent to coastal states facing shoreline erosion and population displacement due to the looming threat of sea-level rise – evinced by steadily-rising investment poured into such projects in the last decade.[477] Yet, the legal advantages of these fortification practices, though less conspicuous, are equally promising. This Chapter will unpack the legal effect of shoreline fortification under Article 11 LOSC, justifying why it can be employed to stabilise baselines and entitlement limits. Although the arguments of this Chapter are only addressed to the treaty text, Article 11 has also been recognised to reflect customary international law,[478] hence the conclusions derived in the following sections are also of use to non-parties.

The term 'fortification', here, is deliberate and merits some attention. Scholarship on the subject frequently refers to shoreline fortification as the use of 'artificial' measures to preserve the baseline.[479] Yet this distinction between 'artificial' and 'natural' can sometimes be remarkably complex, particularly when one considers the popularity of new 'soft' engineering techniques that prevent erosion through the use of coastal vegetation such as

[474] Hein et al, *Adaptive Strategies for Water Heritage: Past, Present and Future* (2020) 242.

[475] Riding, 'Making Bombay Island', 1661-1728' 59 Journal of Historical Geography (2018) 27, 34.

[476] Cheung & Tang, 'The Changing Planning Missions for Waterfront Space in Hong Kong' 47 Habitat International (2015) 231, 232.

[477] See: Nicholls et al, 'Global Investment Costs for Coastal Defense through the 21st Century' World Bank Group Policy Research Working Paper No. 8745 (2019).

[478] Dubai-Sharjah 661-3; ILC, Sixth Session Report A/CN.4/88 (1954) 155; Jennings & Watts (eds), *Oppenheim's International Law* (9th edn, 1996) ¶193; Carleton, 'Problems Relating to Non-Natural and Man-Made Basepoints under UNCLOS' in Symmons (ed), *Selected Contemporary Issues in the Law of the Sea* (2011) 35; Fietta & Cleverly (n 352) 210, 216; Churchill, Lowe & Sander (n 131) 87.

[479] See, for instance: Soons (n 19); Carleton (n 478) 31; ILA (n 120) 5; Symmons, 'Article 11' in Proelss (n 72) 125.

mangroves and cypress trees, or through indirect interventions that lead to the accretion of land by impacting ocean currents, winds and sedimentation patters.[480] The use of 'artificial' can also be needlessly misleading in this context. The LOSC makes a crucial distinction between 'naturally formed area[s] of land' and 'artificial islands, installations and structures', with the latter being denied insular status under Article 121. This might well lead one to hypothesise, as some have,[481] that the use of fortification to preserve a feature could demote its status to that of a 'rock' which, as argued below, is incorrect. To avoid such confusion, the section will opt to describe coastal defences as the use of 'physical' or 'fortification' measures, to distinguish them from the purely legal ones described in preceding sections. However, this does not imply the absence of a legal interpretive exercise in examining the effect of physical measures on maritime entitlements. Similarly, the section will designate the impact of such interventions as a temporary 'stabilisation' or 'preservation' of the baseline, rather than an act that fixes the low-water mark. The former is more descriptively accurate because the juridical impact of physical interventions is just as transient and impermanent as that of the legal measures described in the preceding Chapters. There are definite doctrinal limits to how far physical measures may be employed to stabilise baselines and entitlement limits. There is also a threshold of sea-level rise beyond which their utility in deferring baseline revision breaks down. It is imperative that they be understood in this light as provisional measures.

The section will begin by arguing that the use of fortification measures to stabilise baselines is covered by Article 11 LOSC, which governs the use of harbour works on the coast [**I**]. Next, it will distinguish the use of fortification measures from the act of land reclamation, suggesting that although the legal justification for the two are frequently conflated in

[480] Papadakis, *The International Legal Regime of Artificial Islands* (1977) 93; Schofield & Freestone (n 167) 154.

[481] See, for instance: O'Connell (n 195) 196-7; van Dyke, 'Legal Issues Related to Sovereignty over Dokdo' 39 ODIL (2007) 157, 197.

scholarship, they rest on different footings [**II]**. Finally, the potential impact of fortification measures on insular status under Article 121 LOSC will be considered [**III**].

A brief caveat on the cost-benefit analysis applied to such measures is warranted to better contextualise the legal analysis that follows. The jurisdictional benefits offered by fortification measures are hardly the primary aim with which they are typically constructed in current practice.[482] Rather, it is their utility in protecting human lives and territory that better explain their popular use.[483] As a result, the calculus employed to vindicate or refute the construction of such measures rarely considers whether they can be deployed to serve their legal function alone. Even where it may be economically unviable to preserve the entirety of a given territory through coastal fortification, it may still make fiscal sense to fortify specific points on the shore that are critical to the coastal state's entitlement limits in order to preserve access to vital resources. This simple point is frequently overlooked in the literature on this subject. One encounters this often in writing on coastal management policy.[484] On occasion, this oversight also creeps into the work of scholars working within the law of the sea. Schofield, for instance, describes the use of planned relocation strategies and 'bulkhead' policies as alternatives:

> Rather than attempting to protect the coast and stabilize its present location (see *infra)*, one possibility would be to, in a sense, accept the inevitable and manage or adapt to the impacts of rising sea levels. Such an approach would allow coastlines to find their own "natural equilibrium" and would have the advantage of avoiding the need to construct costly sea defences.[485]

Freestone, in his early work, also appears to suggest an 'all or nothing' approach on the question of physical measures.[486] Similarly, the ILC's Study Group discusses the costs

[482] Schofield & Freestone (n 167) 154.

[483] Ibid.

[484] McGuire, *Adapting to Sea Level Rise in the Coastal Zone: Law and Policy Considerations* (2018) 76-92; Nicholls (n 477).

[485] Schofield (n 84) 214.

[486] Freestone, 'International Law and Sea Level Rise' in Churchill & Freestone (eds), *International Law and Global Climate Change* (1991) 118.

associated with coastal fortification measures on the presumption that, where fortification is adopted, it must be used to preserve the entirety of the shore and not just specific basepoints.[487] Yet, surely there may be circumstances where a retreat is optimal from a human safety perspective but the partial use of coastal fortification is also warranted to preserve critical basepoints,[488] justifying the combined application of both relocation and fortification strategies. While contemplating the writing that follows, it is imperative to account for this point: the costs associated with fortifying a shoreline to protect territory and human population are not identical to the costs associated with preserving specific basepoints in order to stabilise entitlement limits. This is essential to understanding why coastal fortification offers promise in mitigating the impact of sea-level rise on maritime entitlements.

## I. Coastal Fortification as an 'Integral Part of the Harbour System'

In the pursuit of legal justification to stabilise the low-water mark through acts of physical construction, a provision on ports might not catch one's attention. Yet, in peculiar fashion, it is this title that labels Article 11 LOSC,[489] which provides:

> For the purpose of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system are regarded as forming part of the coast. Off-shore installations and artificial islands shall not be considered as permanent harbour works.

[487] Aurescu & Oral (n 21) 78.

[488] Schofield acknowledges this possibility yet does not address how this might impact his framing of 'bulkhead' fortification policies and 'retreat' policies as alternatives: Schofield (n 84) 191.

[489] Though part of the context to be considered while interpreting the terms of a treaty under Article 31(1) VCLT, the title of a provision is to be accorded less weight in the crucible approach where it is apparent that such title is 'too general to provide specific guidance': Gardiner (n 35) 200. See also: Oil Platforms 819. Therefore, the use of 'Ports' as the title to Article 11 should not weigh strongly in favour of a narrow construction of the provision when it is apparent that this title is not intended to describe the complete scope of the provision, which extends to all permanent harbour works.

This provision is frequently cited in scholarship as permitting the use of physical measures to legally preserve and enhance the baseline,[490] with coastal fortification being read in as a 'permanent harbour work' that forms 'an integral part of the harbour system'. However, this is often done without any systematic analysis of the rules of treaty interpretation, of state practice in the application of this provision, and of the drafting history of Article 11. These are all, of course, necessary steps to establish the accuracy of the claim. More critically, little effort is made to reconcile the liberal interpretation of 'harbour works' postulated in academic writing with the ostensibly narrow construction adopted for these terms by the ICJ in the Black Sea case. This section will address each of these elements in order.

### A. Appraising the Scholarship

The utility of Article 11 in legitimising the construction of physical measures as a means to stabilise the baseline hinges on one vital question: does coastal fortification constitute an 'outermost permanent harbour work which forms an integral part of the harbour system'? If it does, then the low-water mark produced at the interface of such constructed features and the ocean will determine the location of the baseline for measuring entitlements, rather than the low-water mark of the naturally occurring shore. Several scholars have addressed this question, albeit with different approaches. Carleton, for instance, reasons:

> Dykes, levees, berms and seawalls are also used as defences against erosion from the sea. Where these constructions abut directly onto the sea they effectively form part of the State's coast. In these circumstances it is also considered that they form a legitimate part of the State's coastline and can be used as territorial sea basepoints. Perhaps the most well known example of this type of coast is to be found in The Netherlands where the majority of the coast has been reinforced to protect the hinterland from incursions from the sea…[t]hese man-made sea-defence works are considered to be part of the normal baseline and could be used legitimately as territorial sea basepoints. An impressive example is to be found at Oosterschelde in the Zeeland Estuary as shown in Figure 11.[491]

[490] See, for instance: Beazley, *Maritime Limits and Baselines: A Guide to their Delimitation* (1978) 24; McDougal & Burke, *The Public Order of the Oceans* (1987) 422-3; Carleton (n 478); ILA (n 120); Aurescu & Oral (n 21) 44.

[491] Carleton (n 478) 43.

Notably, though arguing that such coastal defences fall within the ambit of Article 11, Carleton provides little legal analysis to justify this position, other than citing a few occurrences of state practice. No reasons are offered to substantiate why such isolated instances are sufficient to warrant an established interpretation of the terms of Article 11. Similarly, The ILA's Baselines Committee, in its Sofia Report, argues:

> It is not clear whether coast protective works that do not form an integral part of a harbour system would be assimilated to harbour works under Article 11 or would be considered part of the Article 5 'coast' independent of Article 11. Notwithstanding, in practice these structures have been taken to form part of the coast.[492]

The report, however, provides no cogent evidence of the state practice it alludes to, choosing instead to justify its inference by citing only academic writing. McDougal and Burke, on the other hand, conclude that:

> There would seem to be no substantial objection to assimilating "coast protective works" to harbour installations even when they are isolated structures if, as is usually the case, they are not extensive. But when such projections do reach excessive length there seems to be little justification for creating a bulge in the territorial sea since coastal interests do not, by reason of the object, become heightened in such a degree as to require such a substantial increment of authority.[493]

Of course, the absence of a 'substantial objection' isn't, in truth, a concrete argument to support one interpretation of a treaty provision over another. Beazley, likewise, argues that 'protection works' such as jetties are assimilated to harbour works because they 'obscure' the location of the naturally-occurring low-water line[494] – though surely such reasoning would permit nearly any sort of construction to meet the Article 11 threshold, rendering the phrase 'integral part of the harbour system' nugatory. This insufficiency in legal justification can also be witnessed in the writing of those who support a narrow construction of 'harbour works'. Scovazzi, for instance, argues that Article 11 applies only to actual port structures such as docks and piers

[492] ILA (n 120) 51.

[493] McDougal & Burke (n 490) 423.

[494] Beazley (n 490) 24.

that facilitate the loading and unloading of vessels, not to 'other artificial structures which are built along the coast but serve different purposes' including, presumably, coastal fortification structures.[495] Yet no reasons are offered to justify this conclusion. Comparably, Reed reasons:

> Clearly, breakwaters that form artificial harbors are included, such as those at the port of San Pedro (Los Angeles's harbor). Similar structures at the mouths of rivers, such as the Sabine between Texas and Louisiana, are equally obvious. But less apparent are jetties of similar construction built out from the coast to discourage the erosion of beaches.[496]

Again, no analysis can be discerned from the accompanying text to substantiate this distinction drawn between protective structures that accompany ports and isolated sea-defences such as a jetty built to discourage beach erosion. Other than naming a few instances of practice, all emanating from the United States, no attempt is made to comprehensively appraise the manner in which states have sought to apply this provision. Árnadóttir, Rayfuse, Schofield and Freestone also argue that coastal protective structures can be used to preserve the baseline but offer no analysis for why they fall within the meaning of Article 11.[497] One cannot but notice, through this brief review of literature on the subject, the lack of systematic reasoning and evidence justifying the proposed interpretations of Article 11.

### B. The Scope of Article 11

Any interpretation of Article 11 must, inevitably, begin by querying what the ordinary meaning of the terms 'port', 'harbour works' and 'integral part of the harbour system' are.[498] To this there is no straightforward answer. As Tanaka notes, '[n]either the LOSC nor the TSC provides a clear meaning for the term "harbour works which form an integral part of the harbour

[495] Scovazzi, 'Baselines' MPEPIL (2007) ¶7.

[496] Reed (n 120) 190.

[497] Rayfuse, 'Sea Level Rise and Maritime Zones' in Gerrard & Wannier (n 112) 175-6; Schofield & Freestone (n 167) 157; Árnadóttir (n 133) 54;

[498] Article 31(1) VCLT; Aegean Sea 21; Avena 48; Kasikili/Sedudu 1064; Linderfalk (n 38) 182; Merkouris (n 38) 88; Thirlway (n 38) 1244; Gardiner (n 35) 186.

system"'.[499] The International Hydrographic Organization ('IHO'), however, defines a port as a 'place provided with terminal and transfer facilities for loading and discharging cargo or passengers, usually located in a harbour'.[500] A harbour, in turn, is described as a 'natural or artificially improved body of water providing protection for vessels, and generally anchorage and docking facilities'.[501] That a harbour can be 'artificially improved' does offer some guidance, but this definition does not provide a clear answer on whether structures built purely for fortification purposes would fall within its scope. While 'protection' is mentioned, the term is used only in the context of vessels and not the shore directly – though, arguably, several structures built to shelter vessels offer equal assistance in the prevention of coastal erosion.[502] Yet, no conclusive interpretation can be arrived at by considering just the ordinary meaning of the terms employed.

Moreover, neither the context nor the object and purpose of the LOSC offers any further assistance in this interpretive exercise,[503] since they seem to remain largely indifferent to the inclusion or exclusion of fortification structures within the ambit of Article 11. One could, perhaps, rely on Article 7(2) LOSC to conclude that baseline stability is prioritized by the Convention. However, as argued in the preceding Chapter, this provision only permits a temporary deferral of the obligation of revision for a small category of straight baselines. One might also briefly note the aim of fostering a 'just and equitable international economic order',

[499] Tanaka (n 31) 73.

[500] 'Port', IHO Hydrographic Dictionary. Established in 1921, the IHO is an intergovernmental organization charged with ensuring that the world's oceans are surveyed and charted. To do so, it 'coordinates the activities of national hydrographic offices and promotes uniformity in nautical charts and documents…issues survey best practices, provides guidelines to maximize the use of hydrographic survey data and develops hydrographic capabilities in Member States': <https://iho.int/en/about-the-iho>. Due to its expertise on the subject, IHO definitions are frequently relied on while interpreting technical terms in the LOSC. See, for instance: UN Baselines Study (n 241) 47.

[501] 'Harbour', IHO Hydrographic Dictionary.

[502] Jetties and breakwaters, for instance, offer utility in the protection of shipping and the prevention of coastal erosion: Symmons (n 479).

[503] Articles 31(1) & (2), VCLT; ILC (n 35) 221; Linderfalk (n 38) 103; Gardiner (n 35) 197.

mentioned in the preamble to the LOSC, which may support an interpretation of its provisions that better permit the economic survival of threatened coastal states. Ultimately, however, these are all tenuous arguments in favour of a reading of Article 11 that permits the use of fortification works on the baseline. It cannot be said with any certainty that the context of the LOSC offers clear support in this interpretive exercise.

The next facet that warrants consideration is whether the subsequent practice of the parties reveals any shared understanding of Article 11.[504] Here, significant material offers aid in this interpretive exercise. Algeria,[505] Argentina,[506] Belgium,[507] Brazil,[508] Canada,[509] Cuba,[510] Denmark,[511] France,[512] Grenada,[513] India,[514] Italy,[515] Japan,[516] the Netherlands,[517] Portugal,[518] Qatar,[519] Romania,[520] Spain,[521] St. Vincent and the Grenadines,[522] Togo,[523] the United

[504] Article 31(3)(b) VCLT (n 22).

[505] Decree No. 84-181 of 4 August 1984.

[506] Act No.23.968 of 14 August 1991.

[507] Franckx, 'Belgium and the Law of the Sea' in Treves (ed), *The Law of the Sea: The EU and Its Member States* (1997) 37–96.

[508] Decree No. 8.400 of 4 February 2015.

[509] DOALOS (n 207) 69.

[510] Certification of 6 November 1985.

[511] DOALOS (n 207) 129.

[512] DOALOS (n 207) 168.

[513] Statutory Rules and Orders No. 31 of 1992.

[514] Ministry of External Affairs Notification S.O. 1197(E) of 11 May 2009.

[515] Presidential Decree No. 830 of 22 May 1969.

[516] Enforcement Order of the Law on the Territorial Sea and the Contiguous Zone (2001).

[517] DOALOS (n 207) 233.

[518] DOALOS (n 207) 261.

[519] The Maritime Zones of the State of Qatar (2016).

[520] Act Concerning the Legal Regime of the Internal Waters, the Territorial Sea and the Contiguous Zone of Romania (1990).

[521] DOALOS (n 207) 286.

[522] Archipelagic Closing Lines and Baselines of Saint Vincent and the Grenadines (2014).

[523] List of Coordinates of the Boundaries of the Maritime Spaces of Togo (2019).

Kingdom[524] and the United States[525] all employ isolated coastal fortification structures as part of their baseline, even in the absence of a port. Moreover, Haiti,[526] Mexico,[527] Russia,[528], Solomon Islands,[529] Sri Lanka,[530] Turkey[531] and Tuvalu[532] have enacted legislation that defines 'harbour system' in a sufficiently liberal manner to permit the use of fortification measures as basepoints. Crucially, there is no evidence of any protest by third States against the use of such basepoints.[533] Considering that their interests may be affected, one would expect some objections if the terms of Article 11 were not intended to cover fortification structures.[534] Thus, their silence suggests acquiescence to this established reading of the term 'harbour'.[535]

It is vital to note here that, though the preceding survey of state practice is wide-ranging, it is by no means an exhaustive inventory of all states that draw their baselines from physical fortification measures. A majority of states simply list out their baselines as geographical coordinates, with no descriptive reference of the feature to which such basepoints abut. Other states only publish the outer limits of their entitlement as, indeed, they are permitted to by the terms of Article 16 LOSC, with no clear method available to deduce the precise location of their basepoints. The practice of such states cannot be accounted for in the preceding survey,

[524] Carleton (n 478) 45.

[525] United States v. Louisiana 49-50.

[526] DOALOS (n 207) 182.

[527] Ibid 221.

[528] Federal Act on the Internal Maritime Waters, Territorial Sea and Contiguous Zone of the Russian Federation (1998).

[529] Symmons (n 479) 126.

[530] DOALOS (n 207) 294.

[531] Ibid 313.

[532] Symmons (n 479) 126.

[533] Ibid.

[534] Churchill, 'The Impact of State Practice on the Jurisdictional Framework contained in the LOS Convention: A Commentary' in Elferink (n 443) 128.

[535] Quane, 'Silence in International Law' 84(1) BYIL (2014) 240, 241. For a definition of acquiescence see note 432.

even though they may also employ fortification structures in the construction of their baseline. However, it is not necessary that every state party to the LOSC participate in a relevant practice for it be considered an authentic source of interpretation under Article 31(3)(b).[536] Moreover, that despite these limitations there appears to be significant evidence of the use of physical measures as basepoints does strongly signal their inclusion within the ambit of Article 11. Indeed, the DOALOS, in its report on baselines, noted that coastal defences including 'jetties, moles…breakwaters, sea walls etc.' were part of the definition of harbour works under Article 11, following a review of relevant state practice.[537]

The argument that Article 11 should include fortification structures is also supported by other 'relevant rules of international law' that must be considered in any interpretive process as per Article 31(3)(c) VCLT.[538] The United Nations Framework Convention on Climate Change requires all parties to implement 'measures to facilitate adequate adaptation to climate change' and to '[c]ooperate in preparing for adaptation to the impacts of climate change'.[539] Moreover, it recognizes the need for developed states to 'assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects'.[540] Further, the Cancun Adaptation Framework, adopted in 2010 by the UNFCCC's conference of parties, specifically requires states 'to enable and support the implementation of adaptation actions aimed at reducing vulnerability and building

[536] Linderfalk (n 38) 167; Thirlway (n 38) 1271-2; Gardiner (n 35) 256; ILC (n 52) 79.

[537] UN Baselines Study (n 241) 56.

[538] Iron Rhine Arbitration 28; Mutual Assistance in Criminal Matters 219; US-Shrimp 48-50; EC-Large Civil Aircraft 362; Marceau (n 60) 782; French (n 60) 307; Gardiner (n 35) 303-4; Merkouris (n 60) 47; Dörr (n 60) 610-11.

[539] Articles 4(1)(b) & (e) UNFCCC.

[540] Article 4(4) UNFCCC. .

resilience in developing country Parties'.[541] Similarly, the Warsaw International Mechanism for Loss and Damage, established in 2013 by the conference of parties, facilitates:

> …the mobilization and securing of expertise, and enhancement of support, including finance, technology and capacity-building, to strengthen existing approaches and, where necessary, facilitate the development and implementation of additional approaches to address loss and damage associated with climate change impacts, including extreme weather events and slow onset events.[542]

The Paris Agreement, likewise, establishes as a global goal 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to…ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2'.[543] Collectively, these near universally-ratified instruments demonstrate that international law is not agnostic to the need for climate change adaptation in order to preserve, inter alia, the socio-economic interests of threatened coastal states. As such, these instruments strongly suggest a reading of Article 11 that permits fortification structures to be employed as basepoints, thereby providing durable and predictable access to resources present in the maritime entitlements of such coastal states.

The preparatory work of the LOSC, relied on to confirm the preceding interpretive exercise,[544] also offers support to this reading of 'harbour works' in Article 11. While preparing the bases for discussion for the 1930 Hague Conference for the Codification of International Law, the Preparatory Committee sought written responses from participating states on 'how the baseline for measuring the breadth of the territorial sea is to be fixed in front of ports'.[545] Though most states responded by asserting that the baseline would be set at the 'outermost

[541] ¶11, The Cancun Agreements.

[542] ¶5(c)(iii), Warsaw Mechanism for Loss and Damage FCCC/CP/2013/10/Add.1 (2014).

[543] Article 7(1) Paris Agreement.

[544] Article 32 VCLT.

[545] Rosenne (n 216) 263.

point or harbour work',[546] without offering much insight into what such harbour works would entail, there were two crucial exceptions. Japan noted that where '…special port equipment (such as breakwaters, wharves etc.) exists, the base line is the low-water mark of such special equipment'.[547] Poland, similarly, observed that '[t]he line of the breakwaters may be regarded as the base line for calculating the breadth of the territorial waters'.[548] Breakwaters are, of course, offshore fortification structures ordinarily built to prevent beach erosion and protect the shore from strong ocean currents.[549] In the proceedings of the Territorial Sea Committee, no objections were raised by other states to this characterization of harbour works, and the following provision was adopted in their report: 'In determining the breadth of the territorial sea, in front of ports the outermost permanent harbour works shall be regarded as forming part of the coast'.[550]

It was this provision that was taken up for discussion by the ILC, in preparation for UNCLOS I.[551] Initially, it appears there was some degree of confusion over the meaning of 'harbour works', particularly on the point of whether isolated dykes or jetties would fall within its scope. Lauterpacht asked:

> …if jetties stretching out to sea for seven or eight miles were to be considered as permanent installations. The same question arose in connexion with the dykes which according to some reports the French Government was planning to build in the Bay of Mont Saint Michel to harness the energy of the tides and which would be some twenty miles in length.[552]

[546] Ibid 263-5.

[547] Ibid 264.

[548] Ibid 265.

[549] See, generally: McGuire (n 484).

[550] Rosenne (n 221) 219.

[551] Nandan & Rosenne (n 70) 121.

[552] ILC Yearbook Volume I (1954) 88.

Scelle responded by strongly favouring the inclusion of fortification structures within the provision on ports, pointing out that:

> …the case of jetties was different from that of dykes. Jetties were used for the loading and unloading of cargo and for sheltering vessels; they were part of the harbour works. The dyke referred to by Mr. Lauterpacht was still only a project mentioned by the French Government in connexion with the Minquiers and Ecrehos case which had been before the International Court of Justice in 1953; **in cases, however, where dykes were already being used to protect the coast and where they could be formed into polders, as at some points of the Dutch coast, they should, he thought, be taken into consideration in determining the limits of the territorial sea** [emphasis added].[553]

François, the Special Rapporteur, brought an end to this discussion by noting that **'**dykes used for the protection of the coast constituted a separate problem and did not come under either article 9 (ports) or article 10'.[554] This observation might cause one to infer that coastal fortification structures fall outside the ambit of the provision on ports. Yet, two crucial factors oppose this conclusion. The first is that, as the discussion on this provision on ports was winding down, Lauterpacht responded to François's statement by observing that he was:

> …glad to hear that according to the Special Rapporteur dykes should be studied apart and dealt with in a separate article. As a precautionary measure in connexion with jetties, in article 9 the word "outermost" should perhaps be deleted and the words "stretching out to sea to a distance of three or four miles" inserted after the words "permanent harbour works".[555]

This indicates that François's observation that physical measures built for coastal protection constituted a 'separate problem' was not meant to insinuate their inapplicability, altogether, as basepoints; rather, it was merely an indication that there would be a separate provision drafted and adopted to address this issue and, therefore, it need not be discussed with the provision on ports. While no such provision was ultimately drafted, the second consideration that strongly advocates a liberal reading of 'harbour works' can be found in the final report of the ILC to the General Assembly, in which it recommended the following provision:

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[553] Ibid.

[554] Ibid.

[555] Ibid.

Ports

Article 8

> For the purpose of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system shall be regarded as forming part of the coast.[556]

In the commentary accompanying this provision, the Commission makes a pivotal observation that '[p]ermanent structures erected on the coast and jutting out to sea **(such as jetties and coast protective works)** are assimilated to harbour works [emphasis added]'.[557] From this, we can confidently infer that although no novel provision was ever drafted to address the issues of jetties and protective works, initially flagged in the discussion between Scelle and Lauterpacht, the Commission did ultimately decide that such structures were to be legally equated to 'harbour works' under the provision on ports, thereby enabling their use as basepoints. Ultimately, it was this provision that was adopted unchanged in the 1958 Convention on the Territorial Sea and, subsequently, as Article 11 of the LOSC.[558] Thus, on a close reading of the treaty's preparatory work, it seems evident that it supports a liberal reading of Article 11 to permit the low-water mark of physical measures to be employed on the legal baseline. Indeed, the United States Supreme Court arrived at this precise conclusion after a thorough analysis of the ILC's deliberations in United States v. Louisiana, where it was called upon to determine whether isolated jetties built to prevent beach erosion could serve as basepoints:

> While some early discussion of the subject by the International Law Commission tends to support the United States' position that these jetties are not encompassed by Article 8, see [1954] 1 Y. B. Int'l L. Comm'n 88, the Commentary to the final International Law Commission draft of Article 8 (which was identical to its present form) expressly covers artificial structures which are not closely linked to ports: "(2) Permanent structures erected on the coast and jutting out to sea (such as jetties and coast protective works) are assimilated to harbour works." [1956] 2 Y. B. Int'l L. Comm'n 270. (Emphasis supplied.) Moreover, it should be noted that the beach erosion jetties are in a real sense "harbour works," for they

[556] ILC Yearbook Volume II (1956) 257.

[557] ILC Yearbook Volume II (1956) 270.

[558] Nandan & Rosenne (n 70) 121.

> were designed to protect Grande Isle, which in turn shelters the harbor waters of Caminada Bay and Bay des Ilettes.[559]

While the preceding discussion does indicate that fortification measures built up to stabilise the coast can constitute basepoints, there remains one complication that must still be resolved: the decision by the ICJ in the Black Sea case.

### C. The Black Sea Case

In the Black Sea case, the International Court of Justice was called upon to delimit a single maritime boundary partitioning the exclusive economic zones and continental shelves of Romania and Ukraine. In the process of determining the provisional equidistance line, the Court decided to pay particular attention to the use of the seaward end of Sulina dyke on the Romanian baseline. The dyke was comprised of two training walls built to protect the coast at the mouth of the Danube – evidently, a fortification measure. Ukraine had not contested the use of the seaward end of the dyke as a basepoint at any point. In fact, Ukraine's own submissions on the provisional equidistance line actively relied on the Sulina dyke.[560] Nonetheless, the Court proceeded to consider whether the dyke could constitute a 'permanent harbour work which forms an integral part of the harbour system', as per Article 11, reading this phrase in a narrow fashion:

> The expression "harbour works which form an integral part of the harbour system" is not defined in the Geneva Convention on the Territorial Sea and Contiguous Zone or in UNCLOS; these are generally installations which allow ships to be harboured, maintained or repaired and which permit or facilitate the embarkation and disembarkation of passengers and the loading or unloading of goods…[t]he Court notes, however, that the functions of a dyke are different from those of a port: in this case, the Sulina dyke may be of use in protecting shipping destined for the mouth of the Danube and for the ports situated there.[561]

[559] United States v. Louisiana 50.

[560] Though Ukraine did argue that the dyke ought not to be given full effect: Romania v. Ukraine 104.

[561] Ibid 106.

Intriguingly, to support this interpretation of harbour works as structures primarily concerning the anchorage of vessels and the movement of passengers and goods, the Court cites the same ILC deliberations discussed above:

> The difference between a port and a dyke extending seawards has previously been discussed in the travaux préparatoires of Article 8 of the Geneva Convention on the Territorial Sea and Contiguous Zone. In 1954, the Special Rapporteur of the ILC observed that:
>
> "dykes used for the protection of the coast constituted a separate problem and did not come under either Article 9 (ports) or Article 10 (roadsteads)". Subsequently, the concept of a "dyke" was no longer used, and reference was made to "jetties" serving to protect coasts from the sea...[i]n the light of the above, the ILC did not, at the time, intend to define precisely the limit beyond which a dyke, jetty or works would no longer form "an integral part of the harbour system". The Court concludes from this that there are grounds for proceeding on a case-by-case basis, and that the text of Article 11 of UNCLOS and the travaux préparatoires do not preclude the possibility of interpreting restrictively the concept of harbour works so as to avoid or mitigate the problem of excessive length identified by the ILC. This may be particularly true where, as here, the question is one of delimitation of areas seaward of the territorial sea.[562]

Reading the ILC's discussion on potential issues that could arise through the use of structures of excessive length under Article 11, the Court seems to infer that this provision is to be read restrictively. As a result, it arrives at the following conclusion:

> As for the specific characteristics of the seaward end of the Sulina dyke as a relevant base point for constructing the provisional equidistance line, the Court points out that, irrespective of its length, no convincing evidence has been presented that this dyke serves any direct purpose in port activities. For these reasons, the Court is not satisfied that the seaward end of the Sulina dyke is a proper base point for the purposes of the construction of a provisional equidistance line delimiting the continental shelf and the exclusive economic zones.
>
> On the other hand, while the landward end of the dyke may not be an integral part of the Romanian mainland, it is a fixed point on it. The land at this point is protected from shifts in the coastline due to marine processes. As a relevant base point for the purposes of the first stage of delimitation, it has the advantage, unlike the seaward end of the dyke, of not giving greater importance to an installation than to the physical geography of the landmass.
>
> For these reasons, the Court is of the opinion that the landward end of the Sulina dyke where it joins the Romanian mainland should be used as a base point for the establishment of the provisional equidistance line.[563]

[562] Ibid 106-7.

[563] Ibid 108.

There is much to unpack in this decision. An appropriate starting point is the methodology adopted by the Court in interpreting Article 11. Skirting the rules of treaty interpretation set out in the Vienna Convention, the Court overlooks the crucible approach while construing Article 11, neglecting subsequent state practice in the application of the provision and relevant rules of international law that might aid in the interpretive process. Instead, the Court leaps ahead to the preparatory work of the treaty, a supplementary means of interpretation, relying solely on this source to argue for a narrow construction of 'harbour works'. As such, the Court's reasoning falls short of a comprehensive and systematic interpretation of Article 11.

More worrisome is the manner in which the Court infers the normative import of the preparatory work. It cites much of the discussion raised in the Commission on structures of excessive length alongside the brief dialogue on jetties and dykes in order to justify a narrow construction of the terms of Article 11 that excludes the use of fortification structures. This is an unfortunate conflation of two distinct issues. While there was undoubtedly some confusion about the role of fortification measures such as dykes within the scope of Article 11, as reflected by the previously cited quotes from Scelle, Lauterpach and François, it seems more likely that, on a close reading of their discussion and the ILC's final commentary on the provision, such structures do fall within the ambit of 'harbour works': a fact noted by the US Supreme Court.[564] Even though the ICJ acknowledges the ILC's commentary, even quoting the sentence on coastal protective works, it seeks to mitigate the weight of these words by citing the ILC's discussion on structures of excessive length.

These two deliberations, however, took place on two separate occasions and are contextually independent. The discussion on dykes and jetties occurred at the 259th meeting of

[564] United States v. Louisiana 50.

the Commission on 1 July 1954.[565] The commentary to the draft article on ports, published soon after the conclusion of the Commission's sixth session on 28 July 1954, already included the following sentence: 'Permanent structures erected on the coast and jutting out to sea (such as jetties and protecting walls or dykes) are assimilated to harbour works'.[566] Although not identical in phrasing to the final comment, which opts for the broader phrase 'coast protective works', this comment does evince the Commission's clear inclination to include fortification structures within the provision on ports from a very early stage. The question on excessively lengthy structures, however, only came up much later, at the 295th meeting on 20 May 1955, where François noted that the provision on ports had:

> …given rise to only one criticism by a government. That was the suggestion made in its note verbale dated 1 February 1955 by the United Kingdom Government to the effect that certain installations, such as a pier seven miles long then under construction in the Persian Gulf, should be treated on the same basis as artificial installations on the continental shelf.[567]

Moreover, this was not an issue of significant concern for the Commission, as François went on to observe:

> The case seemed too special to warrant the Commission's amending the general principle it had adopted. The United Kingdom Government seemed to fear an extension of the territorial sea, but the rule adopted by the Commission in draft article 8 would result in only a very limited extension of the territorial sea.[568]

This issue didn't demand the attention of the Commission again till its 365th meeting on 12 June 1956, where Fitzmaurice noted that:

> Piers projecting from the land up to a certain point might reasonably be regarded as part of the land, but if they extended several miles into the high seas, their situation would be similar to that of artificial constructions in the sea, and it was arguable that they should not be regarded as part of the coast, but as erections in the high seas. Admittedly, the situation was at present exceptional, but, with the advance of science, it might not always be so. It would be undesirable to admit that countries might extend their

[565] ILC Yearbook Volume I (1954) 88.

[566] ILC Yearbook Volume II (1954) 155.

[567] ILC Yearbook Volume I (1955) 73.

[568] Ibid.

> territorial waters merely because such piers were connected with the land; at the most, they would be entitled to safety zones.[569]

Yet, even here, he clarified that this matter of excessive length was 'not one of primary importance' and would only be relevant in 'somewhat exceptional cases'.[570] The ILC's final commentary to the provision on ports attests to the relative insignificance of this issue:

> Where such structures are of excessive length (for instance, a jetty extending several kilometres into the sea), it may be asked whether this article could still be applied or whether it would not be necessary, in such cases, to adopt the system of safety zones provided for in article 71 for installations on the continental shelf. As such cases are very rare, the Commission, while wishing to draw attention to the matter, did not deem it necessary to state an opinion.[571]

Therefore, it seems inappropriate for the ICJ to rely heavily on this tangential discussion on structures of excessive length to support a narrow construction of Article 11 that excludes the use of fortification measures, ignoring more direct statements provided by the ILC in its commentary to the provision. That the Court's interpretation of 'harbour works' as 'structures directly supporting port activities' is inapposite can also be inferred from the fact that the phrase 'integral part of the harbour system' was added to the provision specifically to broaden its scope beyond this narrow connotation:

> Mr. SCELLE proposed that after the words "permanent harbour works" the words "which are an integral part of a port system" should be inserted. **The expression was preferable to the shorter term " harbour works " which referred primarily to buildings, cranes, and more generally to movable property and small structures used in ports** [emphasis added].[572]

Some, like Symmons, have tried to explain away the Court's reading of Article 11, by arguing that Sulina dyke was rejected as a basepoint not for its protective nature but for being of excessive length.[573] To this claim there is some merit, since the Court notes that:

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[569] ILC Yearbook Volume I (1956) 193.

[570] Ibid.

[571] ILC Yearbook Volume II (1956) 270.

[572] ILC Yearbook Volume I (1954) 88.

[573] Symmons (n 479) 124.

> …the travaux préparatoires do not preclude the possibility of interpreting restrictively the concept of harbour works so as to avoid or mitigate the problem of excessive length identified by the ILC. This may be **particularly true where, as here,** the question is one of delimitation of areas seaward of the territorial sea [emphasis added].[574]

It could be argued that the phrase 'as here' in the preceding quote suggests that the Sulina dyke was excessively lengthy, though it seems more plausible that the phrase references the act of delimitation more broadly, rather than the specific basepoint under consideration. In any event, this explanation of the Court's reasoning fails to account for the final conclusion in the decision which states:

> As for the specific characteristics of the seaward end of the Sulina dyke as a relevant base point for constructing the provisional equidistance line, the Court points out that, irrespective of its length, no convincing evidence has been presented that this dyke serves any direct purpose in port activities.[575]

Length, therefore, was not the basis of the Court's conclusion. It seems unavoidable to conclude that the ICJ supported a narrow construction of 'harbour works' in the Black Sea case, excluding the use of coastal fortification structures from the scope of Article 11. Yet, it seems equally inescapable to note that the reasoning relied on in this decision is questionable, giving insufficient attention to the preparatory work of the LOSC, state practice in the application of Article 11 as well as relevant rules of international law – all of which support a liberal reading of the phrase.

It is submitted that, on a correct reading of Article 11 LOSC, the provision does encompass the use of coastal fortification measures as basepoints. The ICJ's decision in the Black Sea does, however, highlight an important limitation in coastal fortification exercises in the context of sea-level rise. The physical measures used to stabilise the baseline must not be of 'excessive

[574] Romania v. Ukraine 107.

[575] Ibid 108.

length'. While what constitutes an excessively lengthy structure is to be assessed on a case-by-case basis,[576] as McDougal and Burke argue, the principal question is:

> …whether it is constructed for practical use or rather only as a disguised attempt to extend the territorial sea or internal waters without other relation to local interest. When the construction of an area of land serves a consequential coastal purpose, it would seem to be in the common interest to permit the object to be used for delimitation purposes.[577]

It is safe to conclude that structures built to genuinely protect the coastline from erosion, constructed only to the extent necessary to reasonably fulfil their purpose, can be employed as part of the legal baseline. There are, however, important limits to this exercise. First, Article 11 specifically allows for harbour works to only be equated as 'part of the coast'. What this implies is that they are still bound to the requirement of a low-water mark, per Article 5 LOSC, and, if submerged over time, will be subject to the very same obligation of revision that the charted normal baseline is. Thus, in order to sustain claims from such structures over time, it is necessary for coastal states to preserve their continued position above the chosen vertical datum. Second, over time, sea-level rise may cause the fortification structures employed under Article 11 to lie at some distance from the natural coast. Under such circumstances, they may be subject to challenge as structures of excessive length. They may also be challenged as 'offshore installations' that are not an 'integral part of the harbour system', since they no longer serve a coastal-protective function but are simply artificial structures without purpose.[578] As demonstrated in Section [I][B], and further elaborated in Section [II] below, it is necessary to prove that fortification measures serve a protective function to fall within the ambit of Article 11. Therefore, each of these scenarios could force the coastal state to revise its baseline. Third, while physical measures can be employed to stabilise a baseline or preserve insular status, they

[576] Ibid 107.

[577] McDougal & Burke (n 490) 387-8.

[578] See: Menefee (n 363) 209; Aurescu & Oral (n 21) 44.

cannot be used without restriction to expand the shore or to enhance the status of rocks and low-tide elevations. These are the questions that the Chapter will now turn to.

## II. The Legal Significance of Land Reclamation

There is an unmistakeable inclination, in legal scholarship on the subject, to equate the act of land reclamation with the use of fortification measures, such that the legal effect of the latter as per Article 11 is often implicitly relied upon to support the hypothesis that the former, too, can impact the location of the baseline for the purposes of delimitation. Symmons, for instance, argues:

> The article [Article 11] is silent on the issue of artificial baselines not connected with harbors: such as use of reclaimed land for basepoint purposes, such as on the Hook of Holland, or where coastlines have been artificially protected to stop erosion; or where artificially-created spoil banks or jetties/piers (detached from a harbor) radiate from the coast; but it seems that, by analogous application, outer limits of such land areas could lawfully be used to generate maritime zones even if not part of a harbor complex.[579]

Carleton, likewise, supplements his analysis of harbour works by arguing that '[p]rovided the reclaimed land is an integral part of the mainland or an island, State practice would indicate that it is acceptable to consider it as part of the State's coast for the generation of maritime limits'.[580] It is important to observe, here, that the phrase 'integral part of the mainland' employed as a standard to justify reclamation closely mirrors the wording of Article 11. Furthermore, the 'state practice' relied on by Carleton to support this argument on the legal effect of reclamation are, in fact, instances that fall within Article 11, such as the construction of the Europoort at Rotterdam.[581] In similar fashion, the ILA's Baselines Committee, in its Sofia Report, appendages its discussion on Article 11 by observing:

[579] Symmons (n 479) 120.

[580] Carleton (n 478) 55.

[581] Ibid 52.

> Land Reclamation: Artificial Extension of the Baseline  Artificial extension of the baseline appears to receive a similar treatment [to harbour works under Article 11]. Here too, what little state practice there is indicates that artificial extensions of the coast serve to extend the normal baseline.[582]

Indeed, the Report concludes by summarily conflating these two distinct types of works as follows:

> From the foregoing the Committee concludes that existing international law recognizes harbour works as described above, any coast protective work which extends above the chart datum, and any human-induced extension of the natural coast, as part of the coast for the purposes of Article 5. As such, the normal baseline moves, sometimes seaward, with the resulting changes in coastal configuration.[583]

Similarly, Lathrop pools together the legal treatment of harbour works and land reclamation, arguing that:

> Non-harbour coastal works such as land reclamation projects and coastal protection works are not expressly addressed in the LOSC, but are often included within the appreciation of the 'coast' in the context of defining the normal baseline. Protecting existing coast with sea defences or expanding natural coastal territory through land reclamation projects should be differentiated from the creation of entirely human-made artificial islands noted above. State practice appears to confirm that such augmentations do contribute to the normal baseline, and publicists seem to agree.[584]

This conflation of land reclamation activities with harbour works under Article 11, without justification, can also be witnessed in the work of the ILC's Study Group on Sea-level Rise.[585] Árnadóttir, observing this trend in the literature of classifying land reclamation activities as harbour works, criticises it as a 'broad' and 'unwarranted' interpretation of Article 11.[586]

It is worth noting, at the outset, that there certainly are *some* forms of land reclamation that fall within the ambit of Article 11: the use of land-reclamation to vertically 'build up'

[582] ILA (n 120) 51.

[583] Ibid 52-3.

[584] Lathrop (n 192) 76-77.

[585] Aurescu & Oral (n 21) 76.

[586] Árnadóttir (n 133) 59.

islands by the Maldives,[587] elevating them to approximately 3m above sea-level, or the frequently-cited extension of the Rotterdam coastline to accommodate a port[588] do constitute 'harbour works' and are, therefore, protected. However, this does not lead to the conclusion that all forms of land reclamation, even when conducted purely for territorial expansion without any ostensible harbour function, are to be given legal effect.

Much of the state practice relied on in legal writing to justify this conclusion is misinterpreted. Where land reclamation has been accepted as part of the baseline, this has occurred only through the acquiescence of third states. The artificial extension of the Dutch coastline, frequently cited to support the claim that reclamation contributes to the normal baseline, was only permitted to have legal effect by Germany because the Netherlands, in turn, acquiesced to the German reclamation at Emden.[589] Far from supporting unchecked land reclamation, the delimitation agreement between these two states expressly recognizes that coastal extensions can only be conducted through mutual agreement.[590] Where such acquiescence is not forthcoming, however, state practice does not indicate legal effect of artificial reclamation: Singapore's reclamation works, for instance, are not taken into account in its boundaries with Malaysia and Indonesia.[591] Indeed, in the Land Reclamation case, Malaysia explicitly stated: 'Malaysia denies that artificial extensions of land area, not constituting permanent harbour works within the meaning of Article 11, can constitute base-points for maritime delimitation'.[592] The example of reclamation at Mikuni by Japan, cited by

[587] Gagain, 'Climate Change, Sea Level Rise and Artificial Islands' 23(1) Colorado Journal of International Environmental Law and Policy (2012) 77, 83.

[588] Anderson, 'Some Aspects of the Regime of Islands in the Law of the Sea' 32(2) IJMCL (2017) 316.

[589] Record of Proceedings, Malaysia v. Singapore 13.

[590] Frontier Treaty between the Netherlands and Germany.

[591] Symmons (n 479) 120.

[592] Record of Proceedings, Malaysia v. Singapore 7.

Carleton, was carried out as part of port construction.[593] This is also true of the instance of Rotterdam, as discussed above.[594] Both these examples of practice fall directly within the scope of Article 11 and cannot be used to support all forms of reclamation. Finally, the instances of reclamation for the Jumeirah Palm and the World Islands, cited by Symmons and the ILA Report, are purely hypothetical: The United Arab Emirates does not actually employ these reclamation works in its baseline.[595] These examples, which constitute the core of state practice relied upon in scholarship, are insufficient to support the inclusion of all land reclamation works within the normal baseline.

It would, indeed, be perplexing if the LOSC permitted untrammelled extensions of the coast through reclamation works, thereby permitting states with sufficient affluence to push their baselines and entitlements seaward, encroaching onto the freedom of the high seas and the 'common heritage of mankind principle' that governs access to the Area and its resources. Lauterpacht specifically cautioned against such practices in the ILC's deliberations prior to UNCLOS I, noting the inherent danger in permitting a coastal state to artificially manipulate its baseline and thereby 'double the extent of its territorial sea'.[596] As McDougal and Burke argue, it seems more plausible that an artificially formed area of land can be employed in delimitation only where it is constructed for 'practical use' as per Article 11, and not 'as a disguised attempt to extend the territorial sea or internal waters without other relation to local interest'. [597] Moreover, if all construction activities were permitted to have legal effect and serve as basepoints, this would render Article 11 a futile provision: why would it be necessary

[593] Masuda, 'Coastal and River Transport' in Yamamoto (ed), *Technological Innovation and the Development of Transportation in Japan* (1993) 32–44.

[594] Anderson (n 588).

[595] Council of Ministers' Decision No. 5 of 2009.

[596] ILC Yearbook Volume I (1954) 94.

[597] McDougal & Burke (n 490) 387-8.

to explicitly permit the use of certain man-made constructions if all artificial extensions of the coastline were, in any event, granted legal effect. Therefore, permitting all land reclamation works to be employed on the baseline contradicts a good faith reading of Article 11, taking into account the ut res principle.

That this is not the case can also be inferred from the decision of the ICJ in Qatar v. Bahrain. There, the Court was required to consider the use of Fasht al Azm, which had been subject to reclamation work in 1982, on Bahrain's baseline. Instead of accepting the feature as an integrated part of the island of Sitrah, based on geographical reality at the time of delimitation, both the parties and the Court thought it fit to examine historical evidence to assess what the natural status of the feature was prior to the effect of dredging and reclamation. Ultimately, the ICJ decided to proceed with delimitation without accounting for Fasht al Azm, because it was 'unable to establish whether a permanent passage separating Sitrah Island from Fasht al Azm existed before the reclamation works of 1982 were undertaken'.[598]

In conclusion, it is submitted that the claim that all forms of land reclamation are permitted to be part of the coast under Article 5 LOSC, and to contribute to the baseline, is incorrect. Man-made features can only contribute to the baseline in one of two circumstances: first, where they constitute a 'harbour work' as per Article 11 LOSC, as discussed in the preceding section, and second, where they have been acquiesced to by the international community. In all other circumstances, man-made extensions of the natural coast do not possess legal effect and their use as basepoints is not opposable to third states.

### III. The Question of Insular Status

[598] Qatar v. Bahrain 98.

A final issue that merits attention is the impact of fortification measures on the insular status of features. Article 121(1) LOSC requires a feature to be a 'naturally formed area of land, surrounded by water, which is above water at high tide' in order to be eligible for the status of an island. This has led some to hypothesize that the use of physical measures deprives a feature of its insular status since it can no longer be considered 'natural', relegated instead to an artificial island, permitted only a safety zone and not the full gamut of entitlements. Papadakis, for instance, poses the following question:

> On the other hand it has to be admitted that it is sometimes extremely difficult to decide whether an island is natural or artificial. If, for instance, a natural island is in process of gradually disappearing beneath the waves and it is decided to erect earthworks so as to keep the island above sea level, is that island natural or artificial?[599]

This section will argue that fortification measures that seek to preserve the pre-existing insular status of a feature do not convert it into an artificial island. Beginning with the ordinary meaning of the terms employed by Article 121, the criterion to be eligible for insular status is being 'naturally formed' – the provision, however, makes no clear prohibition to the artificial sustenance of a naturally formed feature.[600] Thus, although the complete artificial construction of territory is certainly outside the ambit of an island, this is not necessarily true of features that acquire their insular status naturally but are then protected from erosion through the intervention of the coastal state. Soons makes this very point, arguing that:

> The artificial conservation of an island once formed by nature does not result in it losing its international legal status of 'island'. This is also the case if the artificial conservation was exclusively intended to preserve the baseline for the purpose of maritime delimitation. Maintaining sea areas may for one coastal State (for example, the Maldives) represent an equivalent and legitimate interest as compared to another coastal State (for example, the Netherlands) maintaining its land territory. It is also submitted that the artificial conservation of an islet exclusively for the purpose of preventing it from degenerating, as a result of sea level rise, to the status of 'rock' as provided in Article 121, paragraph 3 of the Law of the Sea Convention (and thus no longer generating an EEZ) should be considered as permissible.[601]

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[599] Papadakis (n 480) 93.

[600] Charney, 'Rocks that Cannot Sustain Human Habitation' 93(4) AJIL (1999) 863-878.

[601] Soons (n 19) 222.

Similarly, Song observes that:

> …in order to be treated as an island, this area of land must be "naturally formed," and cannot be an artificial island. However, if this naturally formed area of land undergoes reinforcing works to prevent against erosion and submersion by the sea, this activity does not influence this area of land being treated as an island.[602]

Symmons notes that 'man-made attempts to preserve the natural above high-water aspect of an eroding formation may not disqualify its legal insularity', but that a 'similar attempt to create such status on a formerly wholly-underwater formation will be to no legal effect'.[603] Oude Elferink argues that '[a]n island that is reinforced with coastal defences in principle remains an island in the sense of Art. 121'.[604] Dipla, Azaria, Churchill, Lowe and Sander also endorse this position.[605]

This position was implicitly espoused by the Annex VII tribunal in the South China Sea Award, which assessed the status of artificially built-up features on the Spratly Islands by examining their historic natural capacity in order to ascertain whether, prior to their man-made enhancement, they were intrinsically able to sustain human habitation or economic life.[606] In doing so, the tribunal conceded the possibility that such historical natural capacity would be subsequently preserved despite the intervention of the coastal state, and that construction works would not negate their insular status. Moreover, the tribunal deliberately chose to only deprive legal effect to physical measures that transform the status of a feature through artificial addition, not those that simply preserve a pre-existing status.[607] State practice, too, bolsters this conclusion: France, Iceland, Indonesia, Japan, Malaysia, the Maldives, Philippines, Tonga

[602] Song, 'Okinotorishima: A Rock or Island' in van Dyke (ed), *Maritime Boundary Disputes* (2009) 145, 165.

[603] Symmons (n 84) 3.

[604] Elferink, 'Artificial Islands, Installations and Structures' MPEPIL (2013) ¶4.

[605] H. Dipla & D. Azaria, 'Islands' MPEPIL (2021) ¶4; Churchill, Lowe & Sander (n 131) 91.

[606] South China Sea 251.

[607] Ibid 214.

and Vietnam have all employed fortification measures to prevent the submersion of islands, without having their insular status seriously questioned by any state.[608] Indeed, even where insular status is challenged, it is not on the ground that fortification measures cannot be used to preserve the status of a feature. For instance, although China and South Korea object to the use of Okinotorishima as an island by Japan, they do so not because, in the absence of fortification measures, the feature would be submerged.[609] Rather, they challenge the use of the feature because, under its historic natural conditions, it was a rock and not an island, and therefore there is no pre-existing insular status to preserve.[610]

Finally, numerous legal instruments, identified in Section [I][B], promote measures that improve the adaptive capacity of threatened coastal states. As an element of the crucible approach, they provide strong support for an interpretation of Article 121 that permits the preservation of insular status through physical measures. Therefore, it is submitted that the use of physical measures to prevent the submersion of a feature ought not to deprive such feature of its pre-existing insular status. It is worth acknowledging, however, that there are pragmatic constraints that apply when it comes to using fortification to preserve insular status as a whole, rather than to stabilise individual basepoints. As the ILC's Study Group on Sea-level Rise notes, the scale of fortification required for this endeavour would be significant, entailing immense costs that may be prohibitive to several coastal states.[611] Singapore, for instance,

[608] See: Symmons (n 84) 2-3; Schofield (n 84).

[609] Communication by China to the CLCS (2009); Communication by the Republic of Korea to the CLCS (2009).

[610] Ibid.

[611] Aurescu & Oral (n 21) 78-9. Arguably, though, developing states could seek climate finance in this endeavor under Article 9 Paris Agreement. This provision creates an obligation for developed states parties to provide financial resources to developing states parties to assist them in mitigation and adaptation, while also encouraging other parties to provide such support voluntarily. The provision also envisages an enhancement in climate finance mobilization over time, such that current efforts represent a progression beyond previous efforts. The precise manner in which this will occur is likely to only be settled through post-Paris negotiations that seek to undertake crucial gap-filling work for the Convention, but it is certainly possible that finance for coastal fortification could be made available through this route. See: Gastelumendi & Gnittke, 'Climate Finance' in Klein et al (n 4) 243-245; Bodansky et al, *International Climate Change Law* (2017) 240, 247-248; Mehling, 'Article 9' in van Calster & Reins (n 4) 218-236.

estimates that it would cost over $100 billion to artificially sustain its insular status over the next fifty years.[612] Japan has already invested more than $200 million in preserving Okinotorishima.[613] Therefore, while the use of coastal fortification to preserve the status of features is legally sound, it may not always be practically feasible.

## Conclusion

Chapter 4 set out to unearth the legal justification for the use of fortification measures to stabilise the baseline, and to outline the doctrinal limitations of such fortification exercises. The Chapter began by noting the terms of Article 11 LOSC. Although this provision was frequently cited in the scholarship as the legal basis for the use of physical measures to stabilise the baseline, it was observed that this was often done without sufficient systematic analysis of the rules of treaty interpretation. This was identified as a gap in the literature that the Chapter would address. While the ordinary meaning of the phrase 'permanent harbour works' was found to be ambiguous, a significant body of state practice on the application of Article 11 was uncovered that permitted the use of fortification works on the baseline. This interpretation also found support from other 'relevant rules of international law'. Several multilateral climate change instruments were identified that supported climate change adaptation exercises to preserve the socio-economic interests of threatened coastal states. Finally, the preparatory work of the LOSC were also employed to confirm this reading of Article 11.

The Chapter then engaged with critiques that could be levelled against such use of Article 11. It began by discussing the decision of the ICJ in the Black Sea Case. There, the Court adopted a narrow construction of the terms of Article 11 that excluded Sulina Dyke, a protective feature, from the ambit of 'permanent harbour works'. The Chapter demonstrated

[612] Ibid.

[613] Schofield & Freestone (n 167) 156.

that this decision was arrived at without a complete consideration of the rules of treaty interpretation, but by sole reference to the preparatory work of the LOSC. It was further argued that the Court's reading of the travaux placed too much weight on tangential discussions concerning structures of excessive length. More direct statements on the use of coastal defence structures were not given sufficient credence.

The Chapter concluded by acknowledging the limitations that circumscribe the application of physical fortification measures under Article 11 to situations of sea-level rise. First, Article 11 only allows harbour works to be equated as 'part of the coast', suggesting that they are still bound to the requirement of a low-water mark, per Article 5 LOSC. Therefore, if submerged over time, they too will be subject to the obligation of revision as any other basepoint. Second, in situations of significant coastal retreat, the fortification works would not continue to serve a coastal-protective function, rendering them susceptible to challenge for no longer being an 'integral part of the harbour system' or for being structures of 'excessive length'. Third, while physical measures that seek to stabilise or protect the shore in its current form are permitted under Article 11, land reclamation measures that only seek to extend the coastline are not. Fourth, while fortification measures can be used to preserve the pre-existing status of a feature, they cannot be used to enhance its status. Finally, even whilst conserving the status of a feature through fortification measures, the costs involved may be prohibitive for several coastal states, making such measures practically unfeasible. Overall, it can be concluded that coastal fortification is a promising tool to stabilise baselines and entitlements limits, yet one with finite utility in scenarios of extreme sea-level rise.

# Chapter 5

# The Permanence of the Continental Shelf Limit

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## Introduction

Chapter 2 demonstrated that baselines are subject to an obligation of revision when met with coastal change. As a result, the limits of entitlements were presumed to ambulate with coastal retreat. However, this presumption can be displaced in certain circumstances. Chapters 3 and 4 illustrated how this presumption can be temporarily displaced through the use of straight baselines and coastal fortification. This Chapter explores the contours of another exceptional

case whereby the spatial definition of an entitlement remains fixed even in the absence of a stable baseline: the continental shelf limit.

Entitlement to a continental shelf plays a pivotal role in securing a coastal state's economic future. The shelf holds vast reserves of heavy minerals, including chromium, titanium, tin and zirconium.[614] Precious metals including gold and silver have been mined from areas of the seabed found adjacent to the coast.[615] Commercially viable deposits of diamonds have also been discovered within this expanse.[616] The continental shelf contains within it several valuable seafloor fisheries, including those of pearl oysters, crabs, clams, scallops and lobsters.[617] Entitlement to a continental shelf also enables states to harvest ocean thermal energy to produce electricity.[618] Recently, deposits of methane hydrate found in the shelf have also received much attention as a source of fuel.[619] However, the most lucrative resource, by current accounts, are hydrocarbon deposits in the form of petroleum and natural gas.[620]

In conjunction with the richness of its resources, what makes the continental shelf particularly important is the scale of ocean floor it entitles a coastal state to. Article 76 LOSC provides that a coastal state's continental shelf extends to 200 nautical miles from the baseline, and even further under certain circumstances. The enormity of continental shelf claims under the LOSC is detailed by Cook and Carleton in the following manner:

> Under the Convention, those rights cover a total area of about 60 million km2 or around 20% of the world ocean within the 200-nauticalmile (M) limit. But there is perhaps an additional 5% (15 million km2) which lies beyond the 200-M limit, to which sovereign rights may also extend under the terms of the Convention. Up to 54 coastal States may be able to claim extensions of their continental shelf beyond

[614] Churchill, Lowe & Sander (n 131) 222.

[615] Charlier, 'Mining potential of the inner continental shelf' in Cendrero et al (eds), *Planning the Use of the Earth's Surface* (1992) 331.

[616] Churchill, Lowe & Sander (n 131) 222.

[617] Rothwell & Stephens (n 138) 106.

[618] Ibid.

[619] Churchill, Lowe & Sander (n 131) 222.

[620] Ibid.

> 200 M. What is intended is that over the next 10 years or so, nations will document and lay claim to an area of around 75 million km2, equal to more than half the Earth's land surface. Viewed against the background of human history and land conquest extending over thousands of years, the magnitude of the undertaking is extraordinary.[621]

The incentives for securing continental shelf claims in the face of sea-level rise are, therefore, entirely apparent. The means to do so are less clear. Article 76 LOSC does offer promising language to justify an exception to ambulation. It describes the continental shelf limit as 'fixed',[622] 'permanently describ[ed]'[623] as well as 'final and binding'.[624] This has prompted several scholars to argue that this limit is resilient to the threat of sea-level rise, incapable of ambulation unlike the baseline and other entitlement limits.[625] The position taken by this Chapter largely aligns with their conclusion, but the construction of the argument differs in two significant forms: first, existing arguments favouring the stability of the continental shelf limit fail to fully appreciate the terms of Article 76 and to respond to the criticisms levelled against the fixity of the continental shelf limit; and second, they often mistake the temporary resilience of the continental shelf limit for eternal permanence, presuming that the fixity of the continental shelf limit is guaranteed irrespective of the scale of coastal retreat. This Chapter will address these gaps in the literature.

The Chapter begins by appraising the scholarship on the stability of the continental shelf limit, highlighting the need for more detailed analysis to justify why this limit is resilient to the effects of sea-level rise [**I**]. It then unpacks the nature of fixity found within Article 76, arguing that there are two paths to permanence under this provision rather than one. The first, found within Article 76(8), is an accelerated route to permanence for continental shelf limits

[621] Cook & Carleton, *Continental Shelf Limits: The Scientific and Legal Interface* (2000) 3.

[622] Article 76(5) LOSC.

[623] Article 76(9) LOSC.

[624] Article 76(8) LOSC.

[625] See, for instance: Soons (n 19); Schofield (n 19); Hayashi (n 19); Powers & Stucko, 'Introducing the Law of the Sea and the Legal Implications of Rising Sea Levels' in Gerrard & Wannier (n 112) 123; Busch (n 133).

established through engagement with the Commission on the Limits of the Continental Shelf (hereinafter 'CLCS'). The meaning of the phrase 'final and binding' contained in this article is explored, and the claim that this expression only addresses the coastal state is addressed [**II**]. The Chapter then explores the second route to permanence, found in Article 76(9), responding to the claim that it is only applicable to those limits that lie beyond 200 nautical miles from the baseline [**III**]. Finally, the Chapter demonstrates that the permanence of the continental shelf limit provided for in Article 76 is finite; it cannot survive all degrees of sea-level rise [**IV**]. Through this, Article 76 is identified as a tool with promising yet limited utility for providing predictable access to the continental shelf in the context of sea-level rise.

It is worth noting, at the outset, that this Chapter will only examine the resilience of the continental shelf limit through the lens of Article 76 LOSC. No independent analysis will be provided on the stability of this limit under customary international law. This is for three reasons. First, the content of the customary rule governing the extent of the continental shelf is highly uncertain and subject to much debate.[626] To unpack and study this rule would require far more space than this Chapter can dedicate. Second, to study the customary rule is of little practical utility. A significant majority of coastal states are already parties to the LOSC.[627] Many that aren't parties to the LOSC have also agreed to abide by Article 76,[628] including

[626] Burke, 'Customary Law as Reflected in the LOS Convention' in Craven et al (eds), *The International Implications of Extended Maritime Jurisdiction in the Pacific* (1987) 402-9; Fleischer, 'The Continental Shelf Beyond 200 Nautical Miles' in Vidas (ed.), *Law, Technology and Science for Oceans in Globalisation* (2010) 429; Mossop, *The Continental Shelf Beyond 200 Nautical Miles* (2016) 82; Churchill, Lowe & Sander (n 131) 237.

[627] Parties to the LOSC <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXI/XXI-6.en.pdf>.

[628] Kwiatkowska, 'Creeping Jurisdiction Beyond 200 Miles' 22 ODIL (1991) 153. This does not necessarily indicate, however, that Article 76 has acquired customary status in its entirety. In order to acquire customary status, a treaty provision must still 'be of a fundamentally norm-creating character such as could be regarded as forming the basis of a general rule of law': North Sea Continental Shelf 42-3. Several provisions of Article 76 are arguably too technical to fall within this description: Mossop (n 626) 83.

prominent broad-margin states such as the United States[629] and Venezuela.[630] Third, it seems reasonable to conclude that, irrespective of the precise content of the customary rule on the continental shelf limit, the basis for entitlement to the shelf under customary law would continue to hinge on the idea of 'natural prolongation'.[631] Therefore, the analysis provided in section [III][B] of this Chapter, arguing that the permanence of the continental shelf limit emanates, in part, from 'natural prolongation' in Article 76(1) LOSC would apply with equal strength to the customary rule.

## I. Appraising the Literature

That the limit of the continental shelf carries greater potential for resilience to sea-level rise than that of other entitlements is hardly a novel or innovative opinion. This argument has received significant attention in scholarship studying the impact of climate change on maritime entitlements, as discussed below. The starting point for much of this analysis lies within Article 76 of the LOSC, which contains the following provisions:

> 8. Information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured shall be submitted by the coastal State to the Commission on the Limits of the Continental Shelf set up under Annex II on the basis of equitable geographical representation. The Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be **final and binding**.
>
> 9. The coastal State shall deposit with the Secretary-General of the United Nations charts and relevant information, including geodetic data, **permanently describing** the outer limits of its continental shelf. The Secretary-General shall give due publicity thereto [emphasis added].

The phrases 'final and binding' and 'permanently describing' in Articles 76(8) and (9) have been pivotal in hypothesising that the continental shelf limit is impervious to fluctuations of

[629] State Department File Nos P89 0141-0429, 0430, II Cumulative Digest of United States Practice in International Law 1878 cited from Roach & Smith (n 369) 188.

[630] Letter from the Permanent Mission of the Bolivarian Republic Venezuela to the United Nations (2008) <https://www.un.org/depts/los/clcs_new/submissions_files/brb08/ven_sept_2008.pdf>.

[631] Tunisia/Libya 46; Libya/Malta 55.

the baseline triggered by sea-level rise. Yet, for several authors advancing this position, the analysis offered to defend this argument ends abruptly at the locus where it commences: the text of clauses 8 and 9. The fixity of the continental shelf limit is adjudged without sufficiently considering the normative content of the words 'final', 'binding' and 'permanent'.[632] There is little engagement with the argument that the term 'final' in Article 76(8) is only directed to the coastal state, as a means to protect the Area from encroachment, and does not prevent inward ambulation of the continental shelf limit caused by coastal retreat. Likewise, that the permanence mentioned in Article 76(9) only attaches to the limit beyond 200nm is rarely addressed. Insufficient attention is offered to investigate when, precisely, such finality and permanence arise. Finally, the parameters of such permanence are also understudied, with little clarity on when and how it could be extinguished by sea-level rise. Articles 76(8) & (9) are often treated as a means to ensure fixed continental shelf limits irrespective of the severity of coastal retreat.[633] Each of these issues will be addressed in the sections that come below.

However, before this can be done, it is first necessary to demonstrate the need for this study in the light of the existing scholarship. Perhaps the first author to consider the effect of sea-level rise on the continental shelf, Soons noted that Article 76 of the Law of the Sea Convention constitutes a 'remarkable provision' for its ability to protect the continental shelf from coastal retreat.[634] Explaining his position, he argued:

> As far as the continental shelf's outer limit extending beyond 200 nautical miles is concerned, this provision is not that remarkable, since in that case the outer limit is primarily determined by geological and morphological factors which are not affected by sea level rise. That outer limit thus remains. The breadth of the continental shelf, however, increases since the outer limit of the territorial sea has shifted landward (the continental shelf in the legal sense starts beyond the territorial sea). When, however, it is the outer limit of the continental shelf extending exactly to 200 nautical miles that is involved, this

[632] See, for instance: Soons (n 19); Caron (n 19); Schofield (n 19); Hayashi (n 19); Aurescu & Oral (n 21) 26.

[633] Ibid.

[634] Soons (n 19) 216.

> provision is remarkable for it would also fix that boundary, notwithstanding possible later regressions of the baseline.[635]

Soons cannot be faulted for presuming that the continental shelf limit beyond 200 nautical miles would be unaffected by sea-level rise; such limits are to be established primarily on the location of the continental slope, using geological and geomorphological criteria,[636] and appear, at first glance, to be disconnected from the baseline. Indeed, Powers and Stucko also draw a similar conclusion.[637] However, as Busch and Schofield point out,[638] the limit beyond 200 nautical miles is still tethered by the 350 nautical mile boundary from the baseline and the 2500 metre isobath,[639] which can both fluctuate with sea-level rise. As a consequence, for broad margin states that have claimed the full breadth of continental shelf rights that the LOSC permits, sea-level rise can impact their continental shelf limit since it is indirectly tethered to the baseline. Therefore, investigating the permanence of the continental shelf limit that lies beyond 200 nautical miles is still necessary.

More worrying, however, is the assumption that the permanence alluded to in Article 76(9) applies to all continental shelf limits, including those established on the basis of distance to 200nm from the baseline.[640] Since Soons' piece was written before much of the scholarship that argues Article 76(9) only applies to limits beyond 200nm, this is entirely understandable.[641]

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[635] Ibid.

[636] Article 76(4) LOSC.

[637] Powers & Stucko (n 625) 128-9.

[638] Busch (n 133) 177; Schofield (n 19) 407.

[639] Article 76(5) LOSC.

[640] Soons (n 19) 216.

[641] In subsequent writing, Soons has weakened the strength of this conclusion, acknowledging that the applicability of Article 76(9) to the 200 nautical mile limit is less certain than he originally accounted for. See, for instance: Soons (n 148) 358.

Yet others, writing more recently, have repeated this assumption. Hayashi, for instance, observes:

> 'With respect to the continental shelf up to a distance of 200 nautical miles, submission to the CLCS is not required, but the provision concerning depositing charts and information with the UN secretary-general does not refer directly only to the portion beyond 200 nautical miles, and it may be interpreted as meaning that the coastal state may unilaterally deposit these materials with the secretary-general. It would be inequitable if only coastal states with continental shelves extending beyond 200 nautical miles were allowed to establish outer limits permanently, while those coastal states with continental shelves extending only up to 200 nautical miles had no procedure for doing so, meaning that they would lose portions of their continental shelf when islands became submerged.'[642]

Though acknowledging that the applicability of paragraph 9 to the 200 nautical mile limit is uncertain, Hayashi offers no better argument to support such use other than the inequity that might ensue if this were not allowed.[643] Similarly, Caron notes:

> Arguably, the Convention also fixes the outer boundary of the continental shelf permanently. It provides that the 'coastal state shall deposit with the Secretary-General of the United Nations charts and relevant information, including geodetic data, permanently describing the outer limits of its continental shelf.' Professor Bernard H. Oxman states that, given the fixed nature of investment in the continental shelf, the inclusion of the word 'permanent' was intentional and that as far as the United States is concerned, its inclusion reflects earlier recommendations such as that made in an influential 1968 U.S. study: 'The outer limit of the continental shelf should not be subject to change because of subsequent alterations in the coastline or revelations of more detailed surveys.'[644]

Caron offers this conclusion without making any distinction between the continental shelf limit at 200 nautical miles and the limit beyond such distance, relying on a single article by Oxman from 1980 to justify this sweeping conclusion.[645] In identical terms, the ILC's Study Group on Sea-level Rise asserts, in its first issues paper:

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[642] Hayashi, 'Islands' Sea Areas: Effects of a Rising Sea Level' (2013) OPRI Center of Island Studies 7.

[643] It is worth noting that, in other writing, Hayashi expunges all uncertainty, asserting that 'when a coastal state deposits with the Secretary-General the outer limits of its continental shelf, such limits must be described as *permanent* for not only those of the extended shelf, but also those of the 200-mile limit [emphasis in original]': Hayashi (n 19) 193.

[644] Caron (n 19) 10.

[645] As Purcell correctly notes in response: 'The study to which Oxman referred was conducted by a US Commission on 'Marine Science, Engineering and Resources' and published as *Our Nation and the Sea: A Plan for National Action* in 1969. It does not appear to have had any special influence on the work of the Seabed Committee in preparation for the Third Law of the Sea Conference (though the United States was a member of

> In the case of the continental shelf, the Convention provides for the permanency of the outer limits of the continental shelf in article 76, paragraph 9 … once the coastal State deposited the 'charts and relevant information, including geodetic data' describing the outer limits of its continental shelf, this description is permanent and cannot be replaced with another one. So, the outer limits of the continental shelf cannot be affected, as a rule, by the effects of sea - level rise on the baselines, provided that the coastal State deposited the respective charts and information.[646]

Here, once again, permanence is presumed to apply to the 200 nautical mile continental shelf limit without thorough investigation. However, even those that acknowledge the ambiguity within Article 76(9) offer no clear guidance on its interpretation. Schofield, for instance, observes that it 'remains somewhat unclear…whether the coastal State can declare such final outer limits for the entirety of its continental shelf or only the outer limits of its extended continental shelf areas'.[647] However, no attempt is made to resolve the meaning of this 'somewhat unclear' provision. The sections that follow will demonstrate why a narrow construction of Article 76(9) that excludes the 200nm limit from its ambit ignores not only the text of the LOSC and its drafting history but also the conceptual basis of the continental shelf: that it is a natural prolongation of land territory. At this point, however, it is sufficient to remark that little analysis exists to justify the applicability of Article 76(9) to continental shelf limits drawn on distance.

Similarly underexamined is the trigger for permanence. Soons provides no direct analysis on when a continental shelf limit acquires the stability implied by the terms of Article 76(8) and (9).[648] Schofield suggests that 'the limit is fixed in terms of its location once it has been properly established' but provides no further indication on when a limit can be considered to be 'properly established'.[649] Hayashi infers that such permanence can only be acquired through

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this Committee and the Ad Hoc Seabed Committee preceding it). Nor can it be singled out as having any special bearing upon the formulation of Article 76(9) through negotiations at the Conference': Purcell (n 120) 75-6.

[646] Aurescu & Oral (n 21) 26.

[647] Schofield (n 84) 225.

[648] Soons (n 19) 216-7.

[649] Schofield, 'Holding back the waves?' No. 1234 University of Wollongong Papers (2013) 17.

the depositing of charts and materials with the Secretary General under Article 76(9) for the 200nm limit, and through compliance with the recommendations of the CLCS for the limit beyond 200nm.[650] Powers and Stucko also come to the same conclusion.[651] Wolfrum takes this argument a step further, suggesting that, where a state has established limits which disregard the recommendations of the Commission, the Secretary-General will 'be unable to accept them and to give them the publicity as provided for under Article 76, paragraph 9'.[652] Yet nothing in Article 76(9) directly designates 'permanence' as a consequence of depositing charts. If anything, permanence is labelled as an independent quality associated with descriptions of the continental shelf limit. The charts simply function as an acknowledgement of permanence. Moreover, the ILC's Study Group on Sea-level Rise concedes that permanence can arise outside the Commission's procedures 'where this outer limit is fixed on the basis of the outer edge of the continental margin rule or on the 2,500 metre isobath rule'.[653] Similarly, for the ILA's Outer Continental Shelf Committee, permanence arises through acquiescence from the international community and not through Article 76's procedures.[654]

What is apparent from this brief discussion is that existing literature on the subject offers no clear position on when a continental shelf limit acquires the fixity or permanence alluded to in Article 76, and the procedures it must be subjected to for this. Equally elusive are the confines of such permanence. For Soons, permanence of the continental shelf limit implies that it remains fixed in perpetuity, irrespective of the scale of coastal change:

> A remarkable situation again arises with respect to the limits of the continental shelf in the case of a disappearing island. As a consequence of the provision in Article 76, paragraph 9 of the Law of the Sea Convention already mentioned, the outer limit of the continental shelf may be permanently fixed. Once

[650] Hayashi (n 642); Hayashi (n 19).

[651] Powers & Stucko (n 625).

[652] Wolfrum, 'The Role of International Dispute Settlement Institutions in the Delimitation of the Outer Continental Shelf' in Lagoni and Vignes (eds) *Maritime Delimitation* (2006) 19, 25.

[653] Aurescu & Oral (n 21) 26.

[654] ILA Committee on the Outer Continental Shelf, Berlin Conference Report (2004) 24.

> the outer limit of the continental shelf has been established at a distance of 200 nautical miles (or even more) from an island, which island then subsequently disappears entirely, the coastal State would maintain sovereign rights over a seabed area (which may be of considerable extent), while the object which generated these sovereign rights no longer exists.[655]

Hayashi and Busch also adopt this position.[656] Yet, the longevity of an entitlement limit does not necessarily imply the immutability of the entitlement in question. Indeed, the ILC's Study Group on Sea-level Rise acknowledges the possibility that the permanence described in Article 76 carries finite parameters, and might not survive the extinction of the landmass from which the continental shelf limits are derived.[657] Unfortunately, the Study Group does not offer any strong conclusion on this question.

In summation, while the literature on this issue does demonstrate a strong proclivity towards asserting fixity for the continental shelf limit, it does so without fully considering which continental shelf limits are permanent, when precisely they acquire permanence, to whom this permanence is opposable, and the bounded nature of this permanence when faced with large-scale sea-level rise. The absence of in-depth discussion of these issues is signalled by Mayer, who surmises:

> While there has been significant discussion of the impact of sea level rise on ambulatory maritime boundaries, there has been much less discussion of the ramifications of sea level rise on the outer limits of the continental shelf as described in article 76…[m]ost of those who have discussed this issue have qualified their statements by saying that based on article 76(8) and (9) the outer limits of the continental shelf are 'arguably' fixed, but few have looked at the ramifications of these fixed outer limits in the context of rising sea level.[658]

The sections that follow will investigate the normative content of permanence for continental shelf limits, probing the questions raised in this discussion.

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[655] Soons (n 19) 218-9.

[656] Hayashi (n 642) 7; Busch, *Establishing Continental Shelf Limits Beyond 200 Nautical Miles* (2016) 315.

[657] Aurescu & Oral (n 21) 64.

[658] Mayer, 'The Continental Shelf and Changing Sea Level' in Nordquist and Moore (eds), *Maritime Boundary Diplomacy* (2012) 197, 207.

## II. The Finality of the Article 76(8) Limit

Article 76(8) of the LOSC requires a coastal state to submit information on the limits of its continental shelf beyond 200 nautical miles to the CLCS, following which it is to receive the Commission's recommendations on the conformity of such limits with the terms of Article 76. The provision notes that '[t]he limits of the [continental] shelf established by a coastal state on the basis of these recommendations shall be final and binding'. There is, however, some ambiguity in deciphering for whom such limits established on CLCS recommendations are final and binding: the coastal state alone or third states as well? In addition, it is unclear when precisely such finality is triggered. Does it arise simply by establishing limits on the basis of CLCS recommendations or does it require something further? These are the questions this section proposes to investigate.

The argument of this section is that Article 76(8) is a carrot and not a stick. It rewards a coastal state that obeys the arduous strictures of the CLCS procedure by rendering the limits established through this procedure 'final and binding' on all parties to the LOSC, and not just the coastal state. It does so without depriving a coastal state of the ordinary route for permanence of the continental shelf limit, discussed in the following section on Article 76(9). As a result, Article 76(8) is simply an additional, incentivised route for obtaining finality of the boundary between areas of national jurisdiction and the Area.

To substantiate its argument, this section will begin by first considering the arguments of scholars who believe that the terms 'final and binding' in Article 76(8) are directed at the coastal state and not third states [**A**]. It will be argued that this reading is inconsistent with the text and structure of the continental shelf provisions within the LOSC. It will also be demonstrated that this interpretation is inconsistent with the treaty's preparatory work [**B**].

Finally, the section will examine the trigger for 'final and binding' limits under Article 76(8) [**C**].

### A. 'Final and binding' for Whom?

At first glance, the phrase 'final and binding' might seem innocuous. The ordinary meaning of these terms, the first step in any interpretive exercise,[659] indicates mutual opposability, preventing either party from challenging or rejecting a limit that is considered to have achieved this status.[660] A contextual reading of Article 76(8) lends further support to this meaning, since it is in this manner that the words 'final' and 'binding' are used in Articles 74, 83, 282, 296 and 298 LOSC.[661] Linderfalk notes that a term or phrase used on multiple occasions in a treaty text must be assumed to carry an identical meaning.[662] Yet, there is significant writing that opposes the application of this meaning to the terms 'final and binding' in Article 76(8). McDorman, for instance, observes:

> The more convincing interpretation of 'final and binding' is that it refers only to the submitting state in that the submitting state, having delineated its outer limit of the continental shelf and that limit not being challenged by other states, cannot subsequently change the location of its outer limit. To this extent, and this extent only, would the outer limit be 'final and binding', not be contestable and perhaps become an obligation erga omnes.[663]

McDorman is not alone in adopting this position. Purcell notes that the terms 'final and binding' in Article 76(8) 'are addressed to the coastal State…they exceptionally prohibit the coastal State from redrawing the limits of the shelf once lawfully established'.[664] Similarly,

[659] Article 31(1) VCLT.

[660] United Nations Publication, *Definition of the Continental Shelf* (1993) 29; Nelson, 'The Settlement of Disputes Arising from Conflicting Outer Continental Shelf Claims' 24 IJMCL (2009) 409, 418.

[661] Article 31(1) VCLT; Equatorial Guinea v. France 20; Qatar v. UAE 27.

[662] Linderfalk (n 38) 106.

[663] McDorman, 'The Role of the Commission on the Limits of the Continental Shelf' 17(3) IJMCL (2002) 301, 315.

[664] Purcell (n 120) 95.

Prescott and Schofield build on McDorman's argument to argue that a limit established under Article 76(8) cannot be binding on third parties since there are no provisions in the LOSC to publicise the Commission's recommendations, a necessity to enable such parties to know their precise obligations.[665] Gau and Jia also adopt identical positions to McDorman, citing his reasoning to argue that the continental shelf limit established through Article 76(8) is only final for the coastal state, to prevent any further revisions of such limit unilaterally, but does not acquire any binding force with respect to third states.[666] For erga omnes opposability, they argue that acquiescence from the international community is essential; merely complying with the CLCS's recommendations does not confer this binding force on the continental shelf limit and does not render it immune to challenge.[667]

Each of these jurists relies on a contextual interpretation of the phrase 'final and binding', displacing the ordinary meaning of these terms, i.e. mutual opposability of established limits, with selective finality directed only at the coastal state. The reasoning offered to defend this interpretation, however, can be contested. Prescott and Schofield's concern is that mutual opposability of the Article 76(8) limit does not cohere well with the structure of the LOSC and the rules governing the CLCS, part of the context to be taken into account while interpreting this provision.[668] They argue that limits established on the basis of CLCS recommendations could only bind the coastal state because of the absence of a provision to publicise the Commission's recommendations. This is no longer true. Rule 54(3) of the Commission's amended Rules of Procedure now require the Secretary General to give due publicity to the

[665] Prescott & Schofield (n 266) 192.

[666] Gau, 'The CLCS as a Mechanism to Prevent Encroachment upon the Area' 10(1) CJIL (2011) 3; Jia, 'Effect of Legal Issues, Actual or Implicit, upon the Working of the CLCS' 11(1) CJIL (2012) 107.

[667] Ibid.

[668] Case Concerning the Competence of the ILO 23; Serbia v. Canada 468; ILC (n 35) 221; Linderfalk (n 38) 105-7; Thirlway (n 38) 1249; Gardiner (n 35) 202.

recommendations of the Commission that pertain to any limit established by a coastal state.[669] Pertinently, even prior to the creation of this rule it is unclear how Prescott and Schofield's interpretation could be sustained. Even if the terms 'final and binding' were addressed solely to the coastal state, to ensure that the coastal state could be held accountable third states would be required to know the content of the CLCS's recommendations. Thus, even in the absence of rules on the publication of CLCS recommendations, it isn't clear why a contextual interpretation of the provision would necessarily lead to an inference that the phrase 'final and binding' only addressed the coastal state.

Similarly, Gau employs a contextual interpretation of Article 76 in light of other provisions found in the LOSC. He argues that erga omnes opposability of a limit established through Article 76(8) would contradict the delimitation process described in Article 83:

> Importantly, the binding nature of such limits is only for the very coastal State (the Submitting State) establishing an outer continental shelf to observe. The limits are neither opposable to nor binding upon third States. A contrary interpretation would make such binding limits under Article 76(8) irreconcilable with the obligations imposed by Article 83(1)–(2) of UNCLOS.[670]

This argument appears to misconstrue the difference between the process of describing limits for an entitlement and delimiting boundaries between overlapping entitlements. Merely because a limit established on the basis of CLCS recommendations is final and binding on all parties to the LOSC does not mean that two states are precluded from selecting a different line to delimit their overlapping continental shelves.[671]

McDorman's argument that third states are free to reject a continental shelf limit established on the basis of CLCS recommendations is linked to his firm position that the role

[669] Rule 54(3) CLCS Rules.

[670] Gau (n 666) 7.

[671] Mossop (n 626) 80.

of the Commission is nothing more than that of a 'legitimator'; its recommendations do not serve as legal or political approval and states can contest the Commission's application of Article 76 to a particular state's limits.[672] His reasoning is central to the argument of several others who dispute the opposability of limits established through Article 76(8) to third states.[673] However, this argument can be disputed on several grounds.

First, it contradicts the literal meaning of the terms 'final and binding'. As Busch explains, the words 'final' and 'binding' carry distinct connotations and must be construed separately in order to give full efficacy to the terms of Article 76(8).[674] According to her, the phrase 'final' refers to the inalterability of the continental shelf limit established through the CLCS procedure and is, therefore, appropriately directed at the coastal state.[675] It means that once the coastal state elects to draw up continental shelf limits on the basis of CLCS recommendations it is no longer free to revise them. However, the term 'binding' can only be reasonably interpreted to apply to third states:

> As the term 'final' is a reference to the coastal State, to whom does 'binding' refer? If it referred only to the coastal State, it would be a superfluous addition to 'final'. As with the term 'final', 'binding' must be interpreted in light of the conditions under which it was established. It follows from the previous section that, during unclos iii, States identified an imminent need to define the limits toward the Area to facilitate, amongst other things, sea-bed mining. The purpose of introducing the phrase was to establish permanent and stable limits, allowing for the exploitation of the resources of the Area. In this context, it would be odd if the phrase 'binding' referred only to coastal States, as it is presumably a desire that the limits also bind other States. This suggests that the reference to 'binding' implies an obligation on other States to accept the outer limits line concerned.[676]

The ILA's Outer Continental Shelf Committee clarifies that it makes little sense for the term 'binding' to be directed solely at the coastal state:

[672] McDorman (n 663) 319.

[673] Gau (n 666); Jia (n 666); Prescott & Schofield (n 266).

[674] Busch (n 656) 348.

[675] Ibid.

[676] Busch (n 656) 351.

> One consequence of the reference to 'final and binding' for other States parties to the Convention is that they can no longer challenge an outer limit line that has become final and binding, even if the parameters on which it is based, such as the baseline, changes. This conclusion follows from the fact that the outer limit line becomes final and binding on the coastal State. Only the coastal State is competent to establish the outer limit of its continental shelf and it would thus be impossible that an outer limit line that is final and binding on the coastal State can still be changed and not be binding on other States.[677]

As hinted at by the Committee here, there is a logical fallacy inherent in presuming that a limit could bind the coastal state that establishes it but still be susceptible to revision if challenged by third states. As the ICJ pointed out in the Anglo-Norwegian fisheries case, 'the act of delimitation is necessarily a unilateral act, because only the coastal state is competent to undertake it'.[678] Likewise, the International Tribunal for the Law of the Sea ('ITLOS') noted in the Bay of Bengal case that '[i]t is clear from article 76, paragraph 8, of the Convention that the limits of the continental shelf beyond 200 nm can be established only by the coastal State'.[679] McDorman also acknowledges that no party other than the coastal state is entitled to establish or revise a continental shelf limit.[680] Therefore, if a continental shelf limit is considered to bind the coastal state, but at the same time remains vulnerable to challenge from third states, it is unclear what consequence, if any, could arise out of such legal challenge. Since only the coastal state can establish limits, and the coastal state remains bound by the continental shelf limit established through Article 76(8), the legal challenge could not possibly force a revision of the limit. However, according to McDorman and the jurists listed above, this limit would also not be opposable to third states. As a result, Article 76(8) generates a futile limit that ties down the only party with the capacity to change it, causing the boundary between the coastal state's continental shelf and the Area to remain undefined indefinitely. This contradicts

[677] ILA (n 654) 23.

[678] Anglo-Norwegian Fisheries 132.

[679] Bangladesh/Myanmar 106.

[680] McDorman (n 663) 306.

the ut res principle, a facet of good faith interpretation, which mandates that every provision must be construed in a fashion that renders it effective.[681]

The only way around this logical conundrum would be to argue, as McDorman does, that the limit established through Article 76(8) only becomes 'final and binding' for the coastal state once it is established on the basis of CLCS recommendations *and* it has received approval or acquiescence from the international community.[682] While this unintuitive reading of the provision is necessary to make McDorman's interpretation legally viable, there is nothing in terms of the provision nor the drafting history that suggests that the status of 'final and binding' is to be deferred till the limit in question receives endorsement from other states. This reading contradicts the ordinary meaning of the words '[t]he limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding'.[683] It also undermines the principle of non-redundancy, an aspect of good faith interpretation,[684] by rendering the entire CLCS procedure futile. Once a limit has been acquiesced to by the international community it would attain opposability anyway,[685] making the reference to finality in Article 76(8) pointless.

Moreover, it is unclear why there would even be a need to make a continental shelf limit 'final and binding' vis-à-vis the coastal state under the LOSC. Purcell reasons that the necessity of this injunction was prompted by the terms of the Convention on the Continental Shelf, which established the limit of the continental shelf to 'to a depth of 200 metres or, beyond

[681] Corfu Channel 24; Free Zones of Upper Savoy 13; Japan-Taxes on Alcoholic Beverages 12; Aegean Sea Continental Shelf 22; Libya/Chad 25; Fitzmaurice (n 48) 203; ILC (n 35) 219; Gardiner (n 35) 179; Linderfalk (n 38) 118-20; Thirlway (n 38) 1263.

[682] McDorman (n 663) 315.

[683] Article 76(8) LOSC.

[684] Fitzmaurice (n 48) 203; ILC (n 35) 219; Gardiner (n 35) 179; Linderfalk (n 38) 110; Thirlway (n 38) 1263; Fitzmaurice & Merkouris (n 35) 147.

[685] Anglo-Norwegian Fisheries 138.

that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources'.[686] Therefore, using the exploitability criterion, coastal states were able to encroach further and further into the deep seabed through an outward revision of their continental shelf limit. According to Purcell, it was to preclude this possibility under the LOSC that the terms 'final and binding' were added to Article 76(8).[687] However, unlike the Convention on the Continental Shelf, the LOSC does not use an exploitability criterion; instead, it provides for detailed formulae within Article 76(4)-(6) which are meant to enable the construction of a precise continental shelf limit. While it is true that these formulae are capable of producing more than one potential continental shelf limit,[688] leaving room for discretion available to the coastal state, one must presume that the limit a coastal state would opt to submit to the CLCS for recommendations would be the one most favourable to itself. As a result, once this limit is accepted by the CLCS through its recommendations and adopted by the coastal state, there are no compelling reasons that might prompt a coastal state to seek a revision of this limit.[689]

McDorman's interpretation can also be disputed through a purposive interpretation of Article 76(8).[690] The predominant opinion is that Article 76(8) is an incentive provided to the

[686] Article 1 Convention on the Continental Shelf. Note that this Convention is replaced by the LOSC for parties to both: Article 311(1) LOSC.

[687] Purcell (n 120) 76.

[688] Antunes & Pimentel, 'Reflecting on the Legal-Technical Interface of Article 76 of the LOSC', paper presented at ABLOS Conference (2003).

[689] Admittedly, the CLCS might choose not to accept the coastal state's submission and recommend a different set of limits. However, in this scenario too, the phrase 'final and binding' would be of little utility as an injunction against the coastal state. If the coastal state chooses not to accept the CLCS's recommendations and retains the original submitted limits, the finality of such limits is never triggered by Article 76(8) and therefore does not operate to prohibit encroachment onto the Area. If, on the other hand, the coastal state re-submits new limits to the CLCS and adopts them on endorsement by the Commission, it would, again, have no compelling reasons to revise such limits since it would, presumably, have chosen those most favourable to it from the options available.

[690] A purposive interpretation of a text aims at 'pinpointing the legal meaning of a text along the spectrum of its semantic meanings' by employing the purpose of the text, i.e. 'the goals, interests, and values that the text seeks to actualize': Barak, *Purposive Interpretation in Law* (2005) 88.

coastal state, enabling it to establish decisive limits for its continental shelf. As the ITLOS noted in the Bay of Bengal delimitation:

> It is clear from article 76, paragraph 8, of the Convention that the limits of the continental shelf beyond 200 nm can be established only by the coastal State. Although this is a unilateral act, the opposability with regard to other States of the limits thus established depends upon satisfaction of the requirements specified in article 76, in particular compliance by the coastal State with the obligation to submit to the Commission information on the limits of the continental shelf beyond 200 nm and issuance by the Commission of relevant recommendations in this regard. It is only after the limits are established by the coastal State on the basis of the recommendations of the Commission that these limits become 'final and binding'.[691]

By describing the procedure under Article 76(8) as a 'right' for the coastal state to enhance 'opposability' of its continental shelf limits with regard to other states, the ITLOS accepted that the terms 'final and binding' are directed not at the coastal state but at all states parties to the LOSC. Indeed, McDorman himself notes that Article 76(8) 'provides a procedural opportunity to establish the outer limits of that shelf that will enhance the opposability of those limits vis-à-vis other States'.[692] According to McDorman, therefore, the CLCS procedure exists as an incentive for the coastal state, allowing it to obtain superior opposability for its continental shelf limits than what might arise were it to establish them unilaterally. Franckx explains that this incentive is coupled with a finite time limit for submissions, to ensure coastal states engage with the CLCS in a prompt fashion.[693] The reason for this incentive structure is to swiftly create definite boundaries to circumscribe the Area and, in doing so, protect the integrity of those parts of the seabed that are now considered 'common heritage of mankind' – a part of the object and purpose of the LOSC,[694] as defined in its preamble and further

[691] Bangladesh/Myanmar 99.

[692] McDorman, 'The Continental Shelf Regime in the Law of the Sea Convention' 27 IJMCL (2012) 743, 747.

[693] Franckx, 'The International Seabed Authority and the Common Heritage of Mankind' 25 IJMCL (2010) 543.

[694] Ibid. Note that the definition of the Area under the LOSC is a negative one, only including those parts of the seabed that lie 'beyond the limits of national jurisdiction': Article 1(1) LOSC. Its scope is, therefore, contingent on the limits of the continental shelf established through Article 76.

underscored by Article 311(6).[695] Therefore, a teleological interpretation of Article 76(8) demands that the provision be interpreted in a manner that incentivises coastal states to engage with the CLCS procedure.

However, in order for the CLCS to 'enhance the opposability' of a continental shelf limit and thereby provide incentives to the coastal state, some legal weight must attach to a limit established through such recommendations. If such limits were equally susceptible to legal challenge as a continental shelf limit established unilaterally by a coastal state, no state would be motivated to undergo this lengthy and expensive procedure. Moreover, having undergone this procedure, were a coastal state to receive recommendations from the CLCS that it disagreed with, it would be unlikely to voluntarily adopt limits based on such recommendations:[696] the only consequence of this action, as per McDorman's interpretation, would be that the coastal state would bind itself to an unsatisfactory limit whereas all other states would remain free to challenge it.

Therefore, McDorman's interpretation of Article 76 would cause the provision to serve as a disincentive for a coastal state to adopt this endorsed limit, prodding it to either adopt an entirely different limit or to defer the establishment of its continental shelf limits altogether. In both scenarios, this delays the establishment of a clear, defined boundary between areas of national jurisdiction and the Area, thereby contradicting the object and purpose of Article 76(8) and the LOSC. In order for Article 76(8) to produce a tangible incentive for coastal states to engage with the CLCS and produce defined boundaries for its continental shelf and, in doing so, provide a clear spatial definition for the Area, the provision must be capable of producing

[695] Belgium v. Senegal 449; Whaling in the Antarctic 251; Somalia v. Kenya (2017) 29-30; Qatar v. UAE 27-8; ILC Commentary (n 35) 221; Gardiner (n 35) 211; Linderfalk (n 38) 204; Thirlway (n 38) 1262; Hollis (n 47) 647-8.

[696] Article 76(8) does not make it mandatory to accept CLCS recommendations: Bangladesh/Myanmar 106-7.

limits that are less susceptible to legal challenge than those established unilaterally by a coastal state. As such, the words 'final and binding' make far more sense when read as creating limits that are automatically opposable vis-à-vis all parties to LOSC: a benefit rather than a burden for the coastal state.

McDorman's interpretation can also be questioned through a contextual reading of Article 76(8), taking into account related provisions of the LOSC. Article 9 of Annex II to the LOSC, for instance, states: '[t]he actions of the Commission shall not prejudice matters relating to delimitation of boundaries between States with opposite or adjacent coasts'. This is also indicated by Article 76(10) LOSC. There would be no need to add these stipulations if the CLCS procedure was not intended to create limits opposable to third states; limits that are only binding on the coastal state are inherently incapable of prejudicing a delimitation process. It would only be necessary to add this caveat if the terms 'final and binding' were meant to include all parties to the LOSC.

This is also suggested by the detailed process through which the CLCS addresses submissions from the coastal state. Once a coastal state makes a submission to the CLCS containing scientific and technical data supporting its claim, all members of the United Nations and all parties to the LOSC are notified of this submission and provided an executive summary along with all relevant charts and coordinates.[697] Any state can intervene at this point to provide comments on the coastal state's submission through a note verbale.[698] Such interventions are to be taken into account by the CLCS while making its recommendation.[699] Affected states can also put on record any unresolved land or maritime disputes, or disputes concerning

[697] Rule 50 CLCS Rules.

[698] Paragraph II(2)(a)(v), Annex III CLCS Rules.

[699] Paragraphs II(2)(a)(v) & VII, Annex III CLCS Rules.

delimitation that are affected by the submission.[700] In such circumstances, the CLCS is prevented from proceeding with the submission unless such affected states consent to it, or collaborate with the submitting state through a joint submission.[701] It is pertinent to note that third states, including non-parties to the LOSC, have frequently availed this opportunity to respond to or protest another state's submission to the CLCS.[702] While a complete list of all third-party reactions and their fate is incredibly long and cannot be accommodated here, such compilations have been provided by other scholars.[703]

Ordinarily, a sub-commission is established to address each submission unless the CLCS decides otherwise.[704] Only three sub-commissions are allowed to operate simultaneously to ensure the submission receives thorough consideration.[705] The sub-commission then conducts its own preliminary analysis, seeks clarifications from the coastal state if necessary, and provides its recommendations based on meticulous consideration of the data and methodology applied by the coastal state to construct its limits.[706] The sub-commission may even seek assistance from other members of the CLCS, request the advice of a specialist or the cooperation of relevant international organizations to enable it to come to a conclusion.[707] The coastal state is also provided an opportunity to respond to the sub-commission's recommendation before it is finalised.[708] The sub-commission's recommendations are then scrutinised by the CLCS, which either approves or amends them

[700] Rule 46 & Annex I CLCS Rules.

[701] Paragraphs 4 & 5(a), Annex I CLCS Rules.

[702] Macnab, 'Third-Party Reactions to Continental Shelf Submissions', in Symmons (ed), *Selected Contemporary Issues in the Law of the Sea*, (2011) 285.

[703] Gau, 'Third Party Intervention in the CLCS' 40(1) ODIL (2009) 61; Macnab (n 702) 295; Busch (n 656) 393.

[704] Rule 51(4) CLCS Rules.

[705] Rule 51(4bis) CLCS Rules.

[706] Annex III CLCS Rules.

[707] Ibid.

[708] Ibid.

before submitting them in writing to the concerned coastal state.[709] In case the coastal state is dissatisfied with the recommendation, it is to make another submission to the CLCS and this entire procedure recurs from the very beginning.[710]

There are several conclusions to be derived from this description of the CLCS procedure. First, it already accounts for the legal interests of third states: the Rules of Procedure require a summary of each submission to be notified to all parties to the LOSC, enabling interested parties to provide comments on a coastal state's submission.[711] Moreover, the Commission refrains from considering submissions that might touch upon unresolved land or maritime disputes, and disputes concerning delimitation, without the consent of affected states. As such, it is unclear why McDorman, Jia and Gau believe that third states must be permitted the freedom to challenge limits established on the basis of CLCS recommendations. The Commission's procedure already provides an adequate opportunity for such states to submit their objections and prevent the consideration of a submission where their interests are affected.

The next conclusion to be derived from the CLCS procedure is that, where a third state disagrees with the Commission's opinion on the application of Article 76(4)-(6) to a particular submission, it is unclear why the opinion of such third state should be given sufficient credence to stall the delineation of a final boundary between a coastal state's jurisdiction and the Area. The Commission is comprised of experts in the field of geology, geophysics and hydrography elected to ensure equitable geographical representation.[712] The Commission is also provided access to data and information that the coastal state considers confidential, whereas third states

[709] Rule 53(1) CLCS Rules.

[710] Rule 53(4) CLCS Rules.

[711] Rule 46 & Annex I CLCS Rules.

[712] Article 2(1), Annex II LOSC.

only have an executive summary to base their objections on.[713] To argue, then, that the opinion of such third states could outweigh that of the Commission and hinder the establishment of 'final and binding' limits for the continental shelf contradicts the emphasis placed by the LOSC on the need to swiftly delineate the division between the Area and spaces within national jurisdiction, thereby undermining its object and purpose.

Finally, it is also unclear why the LOSC would mandate such a detailed procedure, with a two-tier assessment of each coastal state's submission by experts in the field, provisions for comments by third states, for consent from such states where the submission touches upon a dispute, for seeking clarifications and additional data, for requesting the input of specialist bodies and international organizations, as well as for re-submissions were this elaborate procedure to fail if, after all this, the limit established would carry no legal weight and would be equally susceptible to challenge as one established unilaterally by the coastal state. This construction of Article 76(8) contradicts the ut res principle, whereby each provision in a treaty must be interpreted in a manner that gives it effect.[714] It renders the CLCS procedure legally futile, failing to explain why states would invest the time, effort and expertise required to produce submissions and recommendations, if they do not yield any binding effect on third parties. That limits established on the basis of CLCS recommendations have never been challenged provides some support, though limited,[715] against this interpretation.

[713] Rule 51 read with Annex II CLCS Rules.

[714] Gardiner (n 35) 171.

[715] The CLCS has received 92 submissions from coastal states, but has only adopted 35 recommendations so far: Submissions to the CLCS < https://www.un.org/depts/los/clcs_new/commission_submissions.htm>. Therefore, a significant portion of the CLCS's work has not yet been concluded. Until such conclusion it isn't possible to assert, with absolute certainty, that states have treated limits established on the basis of such recommendations as binding.

Perhaps it is for these reasons that McDorman has revisited the strength of his conclusion. In a piece written in 2010, he cites the conclusions of the previously-discussed ILA Outer Continental Shelf Committee Report to observe:

> Article 76(8) of the LOS Convention provides that a coastal state's outer limits established 'on the basis of' recommendations of the Commission are 'final and binding'. Formulations 'on the basis of' and 'final and binding' are intimately linked, such that a submitting state's outer limits are final and binding *on both itself and other states parties* to the LOS Convention only if they have been established 'on the basis of' the recommendations of the Commission [emphasis in original].[716]

In a 2013 article, he goes even further, noting:

> This is not the place to revisit the discussion respecting the wording in LOS Convention, supra note 2, Article 76(8): "The limits of the shelf established by a coastal State on the base of these recommendations shall be final and binding," especially the question of upon whom are the outer limits "final and binding." However, the emphasis of the ITLOS on the relation of the Commission process with the "opposability" of the outer limits with other States gives considerable weight to view that "final and binding" does apply to other States.[717]

In conclusion, there are several persuasive reasons to believe that, under Article 76(8), limits established on the basis of CLCS recommendations are automatically opposable to all parties to the LOSC and are not subject to an obligation of revision. The preparatory work of the LOSC lend further support to this conclusion.

### B. Preparatory Work

The interpretation of Article 76(8) suggested in the preceding section can be confirmed by a resort to the LOSC's preparatory work.[718] Much of the discussion on and drafting of Article 76 took place through informal meetings within Negotiating Group 6, set up by the Second Committee of UNCLOS III to consider the definition of the continental shelf.[719] As a result,

[716] McDorman, 'The Outer Continental Shelf in the Arctic Ocean' in Vidas (n 626) 499, 509.

[717] McDorman, 'The Continental Shelf Beyond 200 NM' in Nordquist et al (eds), *The Regulation of Continental Shelf Development* (2013) 89, 99.

[718] Article 32 VCLT.

[719] Nandan & Rosenne (n 70) 848.

the preparatory work of the treaty contain scant direct evidence on what the shared understanding of the terms 'final and binding' was for participating states. Nonetheless, by considering proposed amendments to Article 76 introduced during meetings of the Second Committee, at attempt can be made to piece together the purpose of this phrase.

One of the earliest occurrences of this phrase can be found in the draft proposed by the Evensen Group to the Second Committee at the third session of UNCLOS III in 1975. The relevant portion of this proposal read as follows:

> 4. The coastal State shall delineate the seaward boundary of its continental shelf where that shelf extends beyond 200 miles from the baselines…
>
> 5. The coastal State, any State with a particular interest in the matter, or the International Authority, may submit any delineation pursuant to paragraph 4 of this article to the Continental Shelf Boundary Commission for review in accordance with Annex .... The decision of the Commission on a delineation so submitted shall be final and binding.[720]

What may be gleaned from the preceding text is that the Continental Shelf Boundary Commission (the original title for the entity later termed the CLCS) was not intended to be a mandatory procedure for the delineation of all continental shelf limits beyond 200 nautical miles. Instead, it was a review mechanism to be employed by the coastal state or by other states with an interest in such delineation seeking to challenge the coastal state's limits. It could even be employed by the International Seabed Authority. After describing the parties entitled to submit a delineation of continental shelf limits for review, the proposal notes that any 'decision of the Commission on a delineation so submitted shall be final and binding'. Surely, in this form, it is amply clear that the decision of the Commission was to be final and binding for all parties that could use the procedure, and not just the coastal state. Indeed, in this formulation it is quite apparent that Commission was conceived to formalise the process of third parties

[720] Ibid 849.

protesting and challenging a coastal state's delineation of continental shelf limits, enabling a swift and conclusive division between zones of national jurisdiction and the Area.

At the fourth session of UNCLOS III in 1976, Ireland submitted a proposal that drew on elements from the Evensen Group text but expanded the role of the Continental Shelf Boundary Commission as follows:

> 4. The coastal State shall delineate the seaward boundary of its Continental Shelf where that Shelf extends beyond 200 nautical miles from the baselines…
>
> 5. Every delineation pursuant to this Article shall be submitted to the Continental Shelf Boundary Commission for certification in accordance with Annex _. Acceptance by the Commission of a delineation so submitted in accordance with Annex and the seaward boundary so fixed, shall be final and binding.[721]

Rather than requiring the Authority or an interested state to challenge a coastal state's delineation of continental shelf limits through the Continental Shelf Boundary Commission, this proposal now made it mandatory for every continental shelf delineation beyond 200 nautical miles to pass through the Commission's certification procedure. The sentence specifying parties entitled to challenge a continental shelf delineation was removed since all delineations were now subject to the review procedure. However, the sentence on the Commission's decision being 'final and binding' was retained from the Evensen Group text. As explained above, it was evident that the original purpose of this phrase was to make a delineation of the continental shelf limit binding on the coastal state, interested third states and the Authority once it had passed through the Commission's review procedure. In other words, the limit would be binding *erga omnes partes*. Nothing in the Irish proposal suggests that the intended meaning of this phrase had been altered and therefore it is submitted that the phrase 'final and binding' continued to apply to third states.

[721] Ibid 852.

Although the Irish proposal gained significant approval in proceedings of the Second Committee and within Negotiating Group 6, it was challenged by a proposal from the Soviet Union which sought to widen coastal state discretion in the Commission's procedure as follows:

> 5. …The Commission [on the Limits of the Continental Shelf] shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State taking into account these recommendations shall be final and unalterable.[722]

Under the Soviet proposal, it was no longer the Commission's decision that was 'final and binding' but the limits established by a coastal state 'taking into account these recommendations' that were to be 'final and unalterable'. To resolve the tension between the Irish and Soviet proposals, the Chairman of Negotiating Group 6 introduced a compromise text. This text drew on the Soviet formulation, noting that the coastal state's delineation of continental shelf limits taking into account CLCS recommendations were to be final and binding. [723] It was adopted into the Informal Composite Negotiating Text.[724] In the revised version of the Informal Composite Negotiating Text, this paragraph was altered once more to emphasize greater parity between the adopted limit and the CLCS's recommendation by replacing the phrase 'taking into account' with 'on the basis of', as follows:

> 8. Information on the limits of the continental shelf beyond the 200 nautical mile exclusive economic zone shall be submitted by the coastal State to the Commission on the Limits of the Continental Shelf set up under annex II on the basis of equitable geographical representation. The Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding.[725]

[722] Ibid 862.

[723] Ibid 864.

[724] Ibid 865.

[725] Ibid 872.

It was this provision that ultimately made its way into the final text of the LOSC.[726]

There are two points to be noted from this discussion of the drafting history of Article 76(8). In its original form, within the Evensen Group text, the phrase 'final and binding' was not intended to apply solely to the coastal state. Although subsequent changes to the provision eliminated the need for other parties to challenge a coastal state's delineation of continental shelf limits, the phrase 'final and binding' was retained at every stage of the discussion of this provision. At no point in this discussion was it suggested that the meaning of this phrase had changed. As such, we must presume that 'final and binding' was still directed towards all parties to the LOSC. The second point to note is that the predominant concern in the drafting of this provision was to provide coastal states greater latitude in the application of CLCS recommendations. While initial versions of the provision made the decision of the CLCS itself 'final and binding', these were amended to ensure coastal state discretion in the application of the recommendations, ensuring that only limits established on the basis of CLCS recommendations were to be 'final and binding'. It would be a sharp inconsistency if, whilst making these amendments to enhance coastal state discretion, those drafting this provision still intended the phrase 'final and binding' to be directed solely at the coastal state. The provision, in this form, would suffer cognitive dissonance: asserting the freedom of the coastal state to deviate (albeit slightly)[727] from CLCS recommendations whilst simultaneously noting that the culmination of this CLCS exercise would be 'final and binding' solely on the coastal state.

That this was not the intended interpretation can also be inferred from the Canadian proposal for an annex to the LOSC describing the functions of the Continental Shelf Boundary

[726] Ibid 882.

[727] See Section II C below.

Commission, introduced at the fourth session of UNCLOS III in 1976. Article VI of this proposal read as follows:

> If a majority of the Special Committee is satisfied, on the basis of the evidence supplied by the coastal State, that the whole or part of the boundary has been correctly delineated in accordance with article 62, it shall certify such boundary or part thereof. This certification shall be final and binding and shall be conclusive for the purposes of this Convention. The coastal State shall issue appropriate charts showing the certified boundary and deposit them with the Secretary-General of the United Nations.[728]

This proposal lends further support to the interpretation set forth above, that the terms 'final and binding' were directed towards all parties of the LOSC. It clarifies that once the Special Committee of the Boundary Commission certified a delineation of the continental shelf, this certification 'shall be final and binding and shall be conclusive for the purposes of this Convention'. The latter half of this phrase makes clear, beyond any doubt, that the terms final and binding are intended to be binding erga omnes partes.

As noted in the Virginia Commentary, it was this proposal by the Canadian delegation that established the basis for what later became Annex II to the LOSC.[729] The Commentary notes that in subsequent drafts of the Annex incorporated in the Informal Composite Negotiating Text, the references to 'final and binding' and 'conclusive for the purposes of this Convention' were dropped since these features were already accounted for in Article 76(7).[730] Instead, a provision was added which merely noted that limits were to be established 'in conformity with the provisions of paragraph 7 of Article 76'.[731] Following a re-numbering of subclauses in Article 76, the final version of this provision in Annex II to the LOSC reads:

> Coastal States shall establish the outer limits of the continental shelf in conformity with the provisions of article 76, paragraph 8, and in accordance with the appropriate national procedures.[732]

[728] Nandan & Rosenne (n 70) 1004.

[729] Ibid 1005.

[730] Ibid 1012.

[731] Ibid.

[732] Article 7 Annex II LOSC.

Again, the changes to Annex II described above were made to reflect the revisions to Article 76, which now made the limits established by the coastal state on the basis of CLCS recommendations final and binding. They do not depict any desire to change the meaning of the terms 'final and binding' or the parties to whom they are directed. The Canadian proposal made clear, in no uncertain terms, that the CLCS procedure was intended to create continental shelf limits that were final and binding and conclusive for the purposes of the Convention. That this sentence from the proposal was ultimately removed does not indicate disagreement with the proposition. Rather, the removal simply demonstrates that this intended meaning was already encapsulated within Article 76(8)'s use of the phrase 'final and binding' and therefore did not merit repetition within Annex II.

Purcell offers an alternate reading of the preparatory work. She argues that the terms 'final and binding' and 'permanent' within Arts.76(8) and 76(9) were introduced to account for the common heritage of mankind principle, which emerged during UNCLOS III.[733] Her reading of the preparatory work suggests that these terms are not directed at third states, but solely at encroachment by the coastal state onto the Area through an outward revision of the continental shelf limit, as was permitted under the 1958 Convention on the Continental Shelf.[734]

There is, however, an error with this interpretation. Although there is frequent reference to the common heritage of mankind principle in the debates on the continental shelf definition during UNCLOS III, there is a noticeable absence of any mention of this principle in relation to the phrases 'final and binding' and 'permanently describing'.[735] Rather, references to this principle and to the Area are only made while discussing the use of a distance-based criterion

[733] Purcell (n 120) 87.

[734] Ibid 76, 81-2, 88-9, 95.

[735] Nandan & Rosenne (n 70).

in the definition of the continental shelf limit, and not while deliberating the CLCS procedure and the finality of the limits generated through it.[736] Indeed, Purcell acknowledges that the references she employs in her argument are from the discussion on using a distance-based criterion to replace the controversial 'exploitability' criterion used in the 1958 Convention.[737] Therefore, it cannot be concluded with any certainty that the finality of the continental shelf limit is a consequence of the emergence of the common heritage principle, and that it is directed solely at the coastal state as a result.

This conclusion is bolstered by numerous references to the need for permanent and final continental shelf limits far before the common heritage principle ever emerged. Purcell states that the drafters of the Convention on the Continental Shelf during UNCLOS I demonstrated 'a lack of concern in 1958 with the precise definition of established limits [for the continental shelf]', and that 'there was no objection to change' in such limits.[738] This is not accurate.

The very first statement made in the first meeting of the Fourth Committee of UNCLOS I, tasked with the topic of the continental shelf, was made by the delegate of France as follows:

> The notion of the continental shelf was new in international law, as the International Law Commission had recognized in its definition in article 67. It must be noted, however, that scientific knowledge concerning the shelf was still incomplete, a circumstance reflected in the Commission's definition, which, because it was not based on an objective criterion, could hardly be described as satisfactory. The problem of definition arose only in respect of the seabed and subsoil of submarine areas outside the area of the territorial sea. The limit of the continental shelf must be constant, definite and known.[739]

While acknowledging that scientific knowledge on the continental shelf was incomplete, the French delegate noted that any limit the Committee agreed upon for the shelf must be 'constant, definite and known'. Since the exploitability criterion failed to meet this need for 'constancy,

[736] Ibid.

[737] Purcell (n 120) 92-3.

[738] Ibid 81-2.

[739] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.1-5 (2009) 1-2.

uniformity and certainty', the delegate opposed its inclusion in the Convention on the Continental Shelf.[740] This sentiment was echoed by several other delegates.

Norway noted that the definition of the continental shelf in the draft article did not 'set a limit to claims made by States', causing the boundary of the shelf to be 'unascertainable and hence potentially controversial'.[741] Lebanon confirmed that it was 'necessary to set an exact limit to the continental shelf'.[742] Pakistan echoed this sentiment, stating that 'the criterion of exploitability…abolish[ed] any definite limit to the continental shelf, replacing it by the possibility of limitless extension subject only to technical considerations…the absence of a fixed limit to the continental shelf was likely to lead to disagreement between States'.[743] The United Arab Republic specified that continental shelf rights must extend to a 'fixed breadth'.[744] Italy indicated that the limit of the continental shelf must be 'a definite, fixed quantity'.[745] Panama observed that it had 'repeatedly pressed for a precise definition of the continental shelf'.[746] China critiqued the exploitability criterion, noting that it 'was not precise enough', and that it 'removed the limit which was fixed' under the depth criterion.[747] Spain observed that 'because the concept [of the continental shelf] was new, it was important to define it clearly…on the basis of specific criteria'.[748] The United States repeated that 'submarine areas reserved for purposes of exploitation to the coastal State should be subjected to a definite

[740] Ibid.

[741] Ibid 4.

[742] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.6-10 (2009) 14.

[743] Ibid 19.

[744] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.11-15 (2009) 27.

[745] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.6-10 (2009) 17.

[746] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.1-5 (2009) 5.

[747] Ibid 4.

[748] Ibid 8.

limit'.[749] The United Kingdom also opposed the exploitability criterion because 'it was likely to give rise to uncertainty'.[750]

That the exploitability criterion was ultimately retained in the final version of Convention on the Continental Shelf does not disprove the fact that states believed a continental shelf limit ought to be fixed and certain. The exploitability criterion was only retained as a temporary measure to allow coastal states to make full use of deep seabed resources whilst scientific knowledge on the continental shelf could advance and acquire specific criteria to define its limits. The ambulatory nature of continental shelf limits under the Convention were a pragmatic compromise and were not intended to be a definitive feature of the shelf, as Purcell argues. This conclusion finds extensive support in the statements of delegates at UNCLOS I. The Dominican Republic, for instance, offered the following explanation for its support of the exploitability criterion:

> The memorandum on the continental shelf by the secretariat of the United Nations Educational, Scientific and Cultural Organization (UNESCO) ' Scientific Considerations Relating to the Continental Shelf' made it clear that the geological and oceanographical knowledge of the continental shelf was too incomplete to form a satisfactory basis for international law…His delegation accordingly supported the present draft of article 67, not as providing a perfect solution, but as offering the best possible prospect of agreement and the best basis for the new legal institution of the continental shelf.[751]

Lebanon observed that while 'it was true that time would bring more accurate knowledge of the continental shelf…there was no need to wait so long before laying down the principles that should govern the continental shelf'.[752] Cuba asserted that, in the absence of greater scientific knowledge, the Committee should defer to the ILC's draft and temporarily retain the exploitability criterion as a 'practical solution'.[753] This was also echoed by the Republic of

[749] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.16-20 (2009) 40.

[750] Ibid 48.

[751] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.6-10 (2009) 9.

[752] Ibid 14.

[753] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.11-15 (2009) 25-6.

Korea,[754] Indonesia, [755] Yugoslavia,[756] Ceylon and India.[757] France warned against accepting the exploitability criterion as a temporary compromise, observing that '[i]t was a dangerous practice to lay down rules which would soon stand in need of modification'.[758] Norway noted that it had 'voted for the International Law Commission's draft…because, although [it] considered that that text lacked balance and precision, it might still form the basis of an international regime and was accordingly preferable to no agreement at all'.[759]

Through the preceding discussion, it can be surmised that the ambulatory nature of continental shelf limits under the Convention on the Continental Shelf was never considered a definitive feature of the shelf, but merely a compromise to be revised once scientific knowledge permitted the establishment of fixed limits based on geology and geography. Indeed, the preparatory work of the Convention reaffirms the belief of states that a continental shelf limit ought to be fixed and unchanging. As such, Purcell's conclusion that the desire for finality of the continental shelf limit only emerged with the common heritage principle and is, therefore, directed solely at the coastal state can be disputed. The preparatory work confirm the interpretation offered above that the terms 'final and binding' in Article 76(8) are directed at all parties to the LOSC.

### C. The Trigger for Finality

Article 76(8) specifies that limits established by a coastal state 'on the basis of' CLCS recommendations are final and binding. This seems to imply a simple 'if/then' relationship,

[754] Ibid 32.

[755] Ibid 26.

[756] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.16-20 (2009) 42.

[757] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.16-20 (2009) 39, 42.

[758] Official Records of UNCLOS Volume VI A/CONF.13/C.4/SR.11-15 (2009) 32.

[759] Ibid 47.

whereby finality is a reward made contingent on complying with the CLCS procedure.[760] Yet some argue that finality requires an additional ingredient: acquiescence from the international community.[761] According to their argument, a limit established on the basis of CLCS recommendations is only binding once a sufficient period of time has elapsed without such limit being challenged. However, in section [II][A] it was demonstrated that this reading is inconsistent with the text of the LOSC. As several others have noted, the trigger for 'final and binding' limits is that they are established 'on the basis of' CLCS recommendations.[762] This was stated by the ITLOS in the Bay of Bengal decision in no uncertain terms.[763] This interpretation is also supported by the preparatory work of the LOSC.[764]

The precise normative content of the terms 'on the basis of', however, remains elusive. By reference to the drafting history of Article 76(8), we can demarcate the range within which the meaning of this phrase lies. Initial proposals by the United States and by the Evensen group sought to make the decision of the CLCS binding on the coastal state.[765] However, this was considered to curtail coastal state freedom in establishing the limits of its continental shelf.[766] Subsequently, through the Soviet proposal, it was suggested that continental shelf limits established by a coastal state 'taking into account' CLCS recommendations were to be final.[767] Singapore, on the other hand, sought greater parity between coastal state limits and CLCS recommendations, proposing that only those limits established 'in accordance with' such

[760] McDorman (n 663).

[761] Gau (n 666); Jia (n 666); Wolfrum (n 652). For a definition of acquiescence see note 432.

[762] ILA (n 654); Nandan & Rosenne (n 70) 848-870; Magnússon, *The Continental Shelf Beyond 200 Nautical Miles* (2015) 87; Purcell (n 120).

[763] Bangladesh/Myanmar 106-7.

[764] See, for instance, statements by Egypt, Mongolia, Swaziland, Uruguay and Yemen in Official Records of UNCLOS Volume XIII A/CONF.62/SR.128 (2009).

[765] Nandan & Rosenne (n 70) 849-50.

[766] Ibid 862.

[767] Ibid.

recommendations would be final and binding.[768] The Federal Republic of Germany, too, argued for such a restrictive provision.[769] A middle ground was arrived at through the United Kingdom's proposal to replace 'taking into account' with 'on the basis of', in the manner currently provided for in Article 76(8).[770] As made clear in a statement by Canada following the introduction of this proposal, it was believed 'on all sides' that the phrase 'on the basis of' was intended to be more restrictive than 'taking into account', requiring closer adherence to the recommendations of the CLCS, but not so restrictive that it would effectively give 'the Commission the function and power to determine the outer limits of the continental shelf of a coastal State'.[771] Ultimately, therefore, it can be concluded that, in order to attain final and binding limits, a coastal state is afforded some margin of discretion and need not adopt the CLCS's recommendations in entirety. At the same time, the relationship between such adopted limits and the recommendation must imply greater correspondence than merely 'taking into account' the latter. The degree to which a coastal state may deviate from the recommendations remains unclear.

Magnússon offers the following interpretation of the terms 'on the basis of':

> It has been pointed out that reference can be made to the interpretation of the wording 'as a basis of ' given by the WTO Appellate Body in the EC Sardines Case. Using the definition of 'basis' in The New Shorter Oxford English Dictionary on Historical Principles, the Appellate Body concluded that 'there must be a very strong and very close relationship between two things in order to be able to say that one is 'the basis for' the other'. Furthermore, 'it can certainly be said—at very least—that something cannot be considered a 'basis' for something else if the two are contradictory'. This means that should this interpretation be used, in the context of the establishment of the outer limits of the extended continental shelf, in order for outer limit lines to be considered established on the basis of the CLCS's recommendations, there must be a very strong and very close relationship between the recommendations of the CLCS and the established outer lines of the coastal State.[772]

[768] Ibid 868.

[769] Ibid 872.

[770] Ibid 873.

[771] Official Records of UNCLOS Volume XIII A/CONF.62/WS/4 (2009) 102.

[772] Magnússon (n 762) 90.

Yet, what constitutes a 'very strong and very close relationship' is just as perplexing as the original phrase. What meaning we might ascribe to 'on the basis of' remains uncertain and may only be resolved in the future through state practice, were states to challenge the finality of adopted limits on the ground that they deviate too significantly from the recommendations of the CLCS. Nonetheless, as Magnússon points out, it may not be necessary to assiduously excavate the precise normative contours of this trigger for finality:

> The majority of the CLCS' recommendations have been uncontroversial. Disagreements between the Commission and the submitting State have usually been resolved in the interactions between the CLCS and the representatives of the submitting State. The disagreement has often regarded the location of a small number of foot of the slope points. Some recommendations have, however, raised questions as to whether the CLCS has reached a reasonable conclusion. States have in most instances, however, decided not to rock the boat and have accepted the recommendations of the CLCS.[773]

As long as states continue to adhere to CLCS recommendations, or to express their dissent through resubmissions to the Commission, the meaning of the phrase 'on the basis of' remains moot. Were a disagreement to arise in the future, with a coastal state adopting limits that deviate from those recommended by the Commission, the reaction of third states would provide us greater insight into the connotation to be assigned to these terms. For now, however, it is sufficient to conclude that Article 76(8) requires a high degree of parity between the recommendations of the CLCS and the limits adopted by a coastal state in order for the latter to be considered 'final and binding'.

### III. The Permanence of the Article 76(9) Limit

Article 76(9) of the LOSC requires a coastal state to deposit charts and relevant information, including geodetic data 'permanently describing the outer limits of its continental shelf'. Much like the phrase 'final and binding' in Article 76(8), one might assume that the reference to 'permanence' in Article 76(9) would imply enduring fixity for the continental shelf limit.

[773] Ibid 77.

However, the limits to which such permanence extends has been controversial. Many scholars have argued that Article 76(9) is interlinked with Article 76(8), such that the 'permanence' described in the former provision merely echoes the 'finality' prescribed by the latter.[774] As a result, they argue that it is only those limits covered by Article 76(8), i.e. continental shelf limits beyond 200 nautical miles from the baseline, which can be considered permanent for the purposes of Article 76(9). It is the aim of this section to respond to this conclusion, arguing that Articles 76(8) and (9) create distinct routes for a coastal state to establish fixed continental shelf limits. The section will demonstrate that interpreting the phrase 'outer limits' in Article 76(9) as 'outer limits beyond 200 nautical miles' is an improper interpretation of the provision [**A**]. It will be argued that this interpretation is also disproved by the expression 'natural prolongation' found within Article 76(1) [**B**]. Instead, the section will prove that the permanence alluded to in Article 76(9) covers all continental shelf limits, both at and beyond 200 nautical miles from the baseline. The trigger for such permanence will also be considered briefly [**C**].

### A. Which 'Outer Limits' does Article 76(9) Consider Permanent?

Soons describes Article 76(9) as a 'remarkable provision' for fixing 'the outer limit of the continental shelf limit extending exactly to 200 nautical miles'.[775] Caron echoes this conclusion.[776] The ILC's Study Group on Sea-level Rise, in its first issues paper, reiterates the position that '…the Convention provides for the permanency of the outer limits of the continental shelf in article 76, paragraph 9',[777] without making any distinction between the limit at 200 nautical miles from the baseline and the limit beyond. Powers and Stucko assert

[774] See, for instance: Schofield (n 84) 225; Hayashi (n 19) 7; Churchill, Lowe & Sander (n 131) 233.

[775] Soons (n 19) 216.

[776] Caron (n 19) 10.

[777] Aurescu & Oral (n 21) 26.

that under Article 76 'the continental shelf jurisdiction of a coastal State becomes 'permanent' once its delimitation is deposited with the Secretary-General of the United Nations, regardless of whether the delimitation is in accord with the natural geographic features or the 200-nm measurement'.[778] Rayfuse notes that coastal states threatened by sea-level rise 'could move to permanently establish the outer limits of their continental shelf for both the 200 nautical mile limit and any extended shelf'[779].

Although this section concurs with their conclusion, none of these writers respond in depth to the claim that the outer limits described in Article 76(9) might only be those that lie beyond 200 nautical miles from the baseline; a claim repeated by numerous notable academics within the law of the sea. Schofield, for instance, presumes that coastal states can only permanently fix their continental shelf limits where the continental margin extends beyond 200 nautical miles from the baseline, noting that '[i]t remains somewhat unclear, however, whether the coastal State can declare such final outer limits for the entirety of its continental shelf or only the outer limits of its extended continental shelf areas'.[780] Hayashi believes that only limits beyond 200 nautical miles can be permanently described under Article 76(9), though he considers this inequitable.[781] Churchill, Lowe and Sander concur with this conclusion.[782] Yet, of all who argue that Article 76(9) applies solely to the limits of the extended continental shelf, only the ILA's Outer Continental Shelf Committee offers detailed substantive reasoning for this conclusion:

> The view that the term 'outer limits' in article 76(9) only concerns the outer limits beyond 200 nautical miles is supported by a number of arguments. Article 76(9) has to be read in conjunction with the preceding and subsequent paragraphs of article 76, all of which are applicable to the outer limit of the continental shelf beyond 200 nautical miles. Reference can also be made to the parallel existence of

[778] Powers & Stucko (n 625) 128-9.

[779] Rayfuse (n 158) 5.

[780] Schofield (n 84) 225.

[781] Hayashi (n 19) 7.

[782] Churchill, Lowe & Sander (n 131) 233.

> articles 76(9) and 84(1) of the Convention. Both these articles refer to the outer limits of the continental shelf, but the latter provision does not contain a reference to the permanency of the outer limit lines on the continental shelf. The acceptance that article 76(9) is applicable to all of the outer limit of the continental shelf would mean that article 84(1) has no known application as far as the reference to the outer limit lines of continental shelf are concerned.[783]

However, this reasoning can be disputed. The Committee begins by stating that the 'provision does not specify if it is applicable to the outer limit of all of the continental shelf…or only to that part of this limit which is situated beyond 200 nautical miles'. This is not entirely accurate. Wherever a provision of the LOSC is intended to apply solely to the limit beyond 200 nautical miles, it says so in clear terms. Articles 76(7) and 76(8) explicitly use the phrases 'outer limits…beyond 200 nautical miles' and 'limits of the continental shelf beyond 200 nautical miles' respectively. Article 76(4)(a) uses the phrase 'outer edge of the continental margin wherever the margin extends beyond 200 nautical miles'. In turn, Article 76(5) uses 'the outer limits of the continental shelf on the seabed, drawn in accordance with paragraph 4 (a)(i) and (ii)' to reference limits beyond 200 nautical miles. Similarly, Articles 3(1)(a) and 4 of Annex II to the LOSC specifically use 'the outer limits of the continental shelf in areas where those limits extend beyond 200 nautical miles' and 'the outer limits of its continental shelf beyond 200 nautical miles'.

By contrast, Article 76(9) uses the untrammelled phrase 'outer limits of its continental shelf', with no suggestion that it only applies to those limits beyond 200 nautical miles. Linderfalk points out that the use of similar but distinct terms in the text of a treaty must be presumed to carry dissimilar meanings.[784] Considering that for every other provision intended to apply solely to the limit beyond 200 nautical miles the Convention has made this caveat

[783] ILA Committee on the Outer Continental Shelf, *Toronto Conference Report* (2006) 16. Note that there was significant disagreement within the Committee on this point, with the report stating that 'several members of the Committee advanced the view that article 76(9) applies also to the outer limit of the continental shelf at 200 nautical miles'.

[784] Linderfalk (n 38) 108.

explicit, it would contradict the contextual meaning of the terms 'outer limits' in Article 76(9) to read them as 'outer limits beyond 200 nautical miles'. Admittedly, however, since the LOSC was negotiated without the use of a prior ILC draft, and through a 'package deal' approach with a consensus-based decision-making procedure, there are inconsistencies in the language employed by the treaty.[785] Indeed, as Oxman observes, '[i]t cannot be assumed that the use of different words in such a huge Convention drafted and negotiated by so many different people in disparate groups over many years, necessarily represents an intentional decision to convey a different meaning'.[786] Therefore, an argument based solely on consistency in the treaty's language might not be sufficient to justify the interpretation forwarded by this section. It is necessary to look further.

The only possible textual reason available to suggest that Article 76(9) applies solely to the limit beyond 200 nautical miles is that it is immediately preceded by Article 76(8) which discusses the CLCS procedure, only applicable for broad-margin continental shelves. Yet, mere proximity of treaty provisions cannot be sufficient reason to negate the ordinary meaning of a treaty term. As Busch points out, 'Article 76(9) is an independent paragraph of Article 76, not integrated in Article 76(8) on ocs limits, but rather placed apart from it'.[787] Moreover, as the ILA's Outer Continental Shelf Committee itself acknowledges, 'Article 76(9) does not require that the outer limits on which information is submitted are the outer limit lines established on the basis of the recommendations of the CLCS under article 76(8)'.[788] If Article 76(9) is not solely intended to govern limits established on the basis of CLCS recommendations, under Article 76(8), it is unclear why its interpretation should be made contingent on Article 76(8).

[785] Noyes (n 44) 234.

[786] Oxman (n 45) 132.

[787] Busch (n 656) 316.

[788] ILA (n 654) 24.

The interpretation that Article 76(9) applies to all continental shelf limits also renders the provision more efficacious, as demanded by the ut res principle.[789] As Oxman notes, by expanding the applicability of the phrase 'permanently describing' to those limits that lie at 200 nautical miles, the provision is capable of protecting all fixed investments made by the coastal state to extract resources from its continental shelf.[790] It also creates a secure boundary between all areas of national jurisdiction and the Area, an important objective for the Convention as argued by Franckx.[791] Therefore, this construction of Article 76(9) is also better suited to the object and purpose of the LOSC, an integral element in any interpretive exercise.[792] On the other hand, there appear to be no plausible reasons to justify why only a continental shelf limit beyond 200 nautical miles ought to be entitled to permanence. Soons points out that this creates an arbitrary and inequitable situation whereby 'an outer limit located because of geological or morphological factors at 210 nautical miles from the baseline would become fixed, whereas a 200-nautical mile limit would not be'.[793]

This inequitable state also undermines the unity of the continental shelf. As the ITLOS acknowledged in Bangladesh/Myanmar, 'Article 76 embodies the concept of a single continental shelf', such that 'the coastal State exercises exclusive sovereign rights over the continental shelf in its entirety without any distinction being made between the shelf within 200 nm and the shelf beyond that limit'.[794] Similarly, the Tribunal in Barbados v. Trinidad and Tobago noted that 'there is in law only a 'single continental shelf' rather than an inner

[789] Gardiner (n 35) 171.

[790] Oxman 'The Third United Nations Conference on the Law of the Sea: The Ninth Session (1980)' 75 AJIL (1981) 211, 239.

[791] Franckx (n 693).

[792] Article 31(1) VCLT.

[793] Soons (n 19) 216-7.

[794] Bangladesh/Myanmar 96.

continental shelf and a separate extended or outer continental shelf'.[795] This was also reiterated in the maritime boundary arbitration between India and Bangladesh.[796] Mossop draws on these observations to conclude that the conceptual nature of the continental shelf, and the sovereign rights possessed by a coastal state therein, remain unchanged from the limit at 200 nautical miles and the one beyond.[797] To interpret Article 76(9) as only referring to the limit beyond 200 nautical miles, however, suggests a conceptual difference between the inner and outer continental shelf limit, whereby the latter is entitled to a greater degree of permanence than the former. This contradicts the notion of a single continental shelf, creating separate rules for different parts of the shelf. There is no sound justification for this.

The ILA's Outer Continental Shelf Committee also relies on a contextual interpretation, taking into account parallel provisions of the treaty text to further its position. The Committee argues that reading Article 76(9) to encompass all outer limits would render Article 84(1) redundant, to the extent that there would be 'no known application as far as the reference to the outer limit lines of continental shelf are concerned'.[798] This, too, can be disputed. Article 84 of the LOSC provides:

> 1. Subject to this Part, the outer limit lines of the continental shelf and the lines of delimitation drawn in accordance with article 83 shall be shown on charts of a scale or scales adequate for ascertaining their position. Where appropriate, lists of geographical coordinates of points, specifying the geodetic datum, may be substituted for such outer limit lines or lines of delimitation.
>
> 2. The coastal State shall give due publicity to such charts or lists of geographical coordinates and shall deposit a copy of each such chart or list with the Secretary-General of the United Nations and, in the case of those showing the outer limit lines of the continental shelf, with the Secretary-General of the Authority.

[795] Barbados v. Trinidad and Tobago 208-9.

[796] Bangladesh v. India 21.

[797] Mossop (n 626) 7.

[798] ILA (n 783) 16.

There are crucial differences between Article 84 and 76(9). While Article 76(9) requires the coastal state to deposit charts and relevant information describing the outer limits of the continental shelf, Article 84 requires the coastal state to draw up charts depicting 'the outer limit lines of the continental shelf **and the lines of delimitation** [emphasis added]'. Article 76(9) requires the perimeter of a coastal state's undelimited entitlement to be publicised, while Article 84 is concerned with the conjunction of those limits with delimited boundaries in order to arrive at a clear demarcation of the terminus of the coastal state's jurisdiction. This ties in neatly with the second difference: Article 76(9) merely requires the coastal state to deposit such information with the Secretary-General of the United Nations who, in turn, is required to publicise it. On the other hand, Article 84 requires the coastal state itself to publicise the information and, further, to deposit the chart depicting outer limit lines with the Secretary-General of the Authority. The parties at whom these two provisions are directed and the obligations created therein are different, albeit faintly so.

One might argue, in response, that the interpretation offered by this section is inconsistent with the structure of the LOSC which employs a single provision for publicity in the context of every other entitlement. Therefore, it might be better suited to the structure of the Convention to consider only Article 84 as the publicity provision for the entire continental shelf, with Article 76(9) being restricted solely to those limits beyond 200 nautical miles. It is important to acknowledge, however, that the LOSC was negotiated without a prior draft from the ILC, on a 'package deal' approach with a consensus-based decision-making procedure.[799] Many provisions of the LOSC, including Article 76, were drafted through the use of informal negotiating groups.[800] As others have acknowledged, this procedure implies that the text of the draft Convention was difficult to perfect and, as a result, inconsistencies in language and

[799] Harrison (n 42) 46.

[800] Ibid.

structure persist in the treaty.[801] Therefore, the possibility of dual publicity should not, in itself, be considered fatal to a liberal interpretation of Article 76(9). Instead, as Purcell explains, the parallel existence of these provisions on publicity might well signal the importance of clearly defining and publicising continental shelf limits under the LOSC, considering their troublesome history under the 1958 Convention.[802] Indeed, the Virginia Commentary outlines crucial differences between Articles 76(9) and 84 to explain their coexistence:

> Paragraph 9 sets out requirements regarding the deposit of relevant information on the outer limits of the continental shelf and the publicity to be given to such information. **It applies to the continental shelf established on the basis of either of the two elements referred to in paragraph 1.** Paragraph 9 is similar but not identical to the provisions of article 84 on 'Charts and lists of geographical co-ordinates.' The two provisions are intended to make available to the international community information on the limits of the continental shelf. In providing that information, the coastal State indicates the limits that constitute the extent of its national jurisdiction, beyond which lies the international seabed area. Accordingly, article 134, paragraph 3, provides that 'the requirements concerning the deposit of, and publicity to be given to' the information on the limits of national jurisdiction 'are set forth in Part VI.' Article 84 requires the deposit of similar information with the Secretary-General, although it allows the substitution of lists of geographical coordinates in place of charts. In contrast with article 76, paragraph 9, however, article 84, paragraph 2, requires the coastal State (instead of the Secretary-General) to give due publicity to such information. It also requires that information on the outer limit lines be deposited with the Secretary General of the Authority…[t]he purpose is the same in all cases-to make the information available to the international community [emphasis added].[803]

Similarly, the DOALOS, in a note describing the practice of the Secretary-General in relation to the deposit of charts, observes that the outer limits of the continental shelf are to be publicised by the Secretary General under Article 76(9) and that such 'outer limit lines of the continental shelf are to be deposited also with the Secretary-General of the International Seabed Authority' under Article 84(2).[804] The use of the word 'also' coupled with the unqualified reference to 'outer limit lines of the continental shelf' suggests that both Article 76(9) and Article 84(2) are intended to apply to all continental shelf limits.

[801] Noyes (n 44) 234.

[802] Purcell (n 120) 102.

[803] Nandan & Rosenne (n 70) 882-3.

[804] DOALOS, Law of the Sea Bulletin No.103 (2020) 26.

It is also important to note that the interpretation offered by the ILA's Outer Continental Shelf Committee would not help resolve any redundancy in these provisions, were it to exist. According to the Committee, that both Article 76(9) and Article 84(1) are concerned with the publicity of information on continental shelf limits implies that one of these provisions is irrelevant. This has already been challenged. Nonetheless, the Committee seeks to resolve this redundancy by reading Article 76(9) as being applicable solely to the continental shelf limit beyond 200 nautical miles, hoping this results in a clean division of purposes for the two provisions. It does not. It merely implies that the limit at 200 nautical miles would no longer receive publicity twice. However, under the Committee's own interpretation, the outer limit lines beyond 200 nautical miles would then require duplicate publicity: first, under Article 76(9) and then again under Article 84. Article 84 cannot be interpreted as the inverse counterpart of Article 76(9), applying solely to the limit at 200 nautical miles. It requires outer limit lines of the continental shelf to be deposited with the Secretary-General of the Authority, a stipulation absent in Article 76(9) and, crucially, a stipulation that would be rendered futile were it to apply solely to the limit at 200 nautical miles. Redundancy, therefore, exists either way. Nonetheless, by acknowledging that the dual existence of Articles 76(9) and 84 is intended to enhance the publicity of continental shelf limits through different channels, it can be mitigated. There is no reason to suggest that only the continental shelf beyond 200 nautical miles ought to receive such dual publicity and, therefore, the better interpretation is that Article 76(9) applies to all continental shelf limits just as Article 84 does.

There is, at present, insufficient subsequent practice on Article 76(9) that 'establishes the agreement of the parties regarding its interpretation'.[805] Australia[806] and New Zealand[807]

[805] Article 31(3)(b) VCLT; El Salvador/Honduras 586; Costa Rica v. Nicaragua 242; ILC Commentary (n 52) 58; Linderfalk (n 38) 165; Thirlway (n 38) 1266; Gardiner (n 35) 256.

[806] Deposit by Australia of information permanently describing the outer limits of its continental shelf (2012).

[807] Deposit by New Zealand pursuant to Article 76, paragraph 9 (2018).

interpret Article 76(9) to apply to all continental shelf limits, including those at 200 nautical miles. Suriname has only used Article 76(9) to publish limits beyond 200 nautical miles, but its submission of coordinates under this provision acknowledges the possibility of also publishing limits based on distance.[808] Belgium,[809] Chile,[810] Cyprus,[811] Lithuania[812] and Niue,[813] on the other hand, seem to consider that Article 76(9) only applies to limits beyond 200 nautical miles, since they have published continental shelf limits up to 200 nautical miles solely under the ambit of Article 84. While Ireland,[814] Mexico,[815] Pakistan,[816] the Philippines,[817] and Russia[818] have only notified continental shelf limits beyond 200 nautical miles under Article 76(9), they are yet to publish any information concerning continental shelf limits at 200 nautical miles. Thus, their practice does not enable us to draw any conclusion on their interpretation of the ambit of this provision. The ILA's Outer Continental Shelf Committee also acknowledges that '[s]tate practice concerning the deposit of information under articles 75(1), 76(9) and 84(1) of the Convention does not allow drawing clear conclusions in respect of the scope of application of article 76(9) and its relationship to article 84(1)'.[819] Greater use of this provision by coastal states in coming years, following the

[808] Deposit by the Republic of Suriname pursuant to Articles 16, paragraph 2, 76, paragraph 9, and 84, paragraph 2 (2018).

[809] Deposit by Belgium pursuant to Articles 16, paragraph 2, 76, paragraph 9, and 84, paragraph 2 (2014).

[810] Deposit by Chile pursuant to Articles 16, paragraph 2, 75, paragraph 2, and 84, paragraph 2 (2000).

[811] Deposit by the Republic of Cyprus pursuant to Articles 75, paragraph 2, and 84, paragraph 2 (2019).

[812] Deposit by the Republic of Lithuania pursuant to Articles 16, paragraph 2, 75, paragraph 2, and 84, paragraph 2 (2006).

[813] Deposit by Niue pursuant to Articles 16, paragraph 2, 75, paragraph 2, and 84, paragraph 2 (2014).

[814] Deposit by Ireland pursuant to Article 76, paragraph 9 (2009).

[815] Deposit by Mexico pursuant to Article 76, paragraph 9 (2009).

[816] Deposit by Pakistan pursuant to Articles 76, paragraph 9, and 84, paragraph 2 (2016).

[817] Deposit by the Philippines pursuant to Article 76, paragraph 9 (2012).

[818] Deposit by the Russian Federation pursuant to Article 76, paragraph 9 (2016).

[819] ILA (n 783) 17.

publication of CLCS recommendations concerning their limits, might enable a shared understanding of this provision to emerge and solidify.

Nonetheless, other 'relevant rules of international law', a part of the interpretive process as per Article 31(3)(c) VCLT, [820] offer strong support for the argument that Article 76(9) should be read in a liberal manner to include all continental shelf limits. The United Nations Framework Convention on Climate Change requires all parties to implement 'measures to facilitate adequate adaptation to climate change' and to '[c]ooperate in preparing for adaptation to the impacts of climate change'.[821] It recognizes the need to 'assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change'.[822] The 2015 Paris Agreement, likewise, establishes as a global goal 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change'.[823] These near universally-ratified instruments demonstrate that international law is not agnostic to the consequences of climate change and the need to preserve, inter alia, the socio-economic interests of threatened coastal states. Ensuring a stable continental shelf limit that remains resilient to sea-level rise is a critical step in securing such socio-economic interests. As such, these instruments support a reading of Article 76(9) that considers continental shelf limits drawn at and beyond 200 nautical miles permanent.

The preparatory work of the LOSC can also be resorted to, to confirm the interpretation of Article 76(9) offered by this section.[824] In an early proposal on this provision, submitted by the USA, it was noted that '[a] boundary established in accordance with the provisions of this

[820] Iron Rhine Arbitration 28; Mutual Assistance in Criminal Matters 219; US-Shrimp 48-50; EC-Large Civil Aircraft 362; McLachlan (n 55) 279; Merkouris (n 60) 95.

[821] Articles 4(1)(b) & (e), UNFCCC.

[822] Article 4(4) UNFCCC.

[823] Article 7(1) Paris Agreement.

[824] Article 32 VCLT.

Article shall be described on appropriate charts which descriptions shall be permanent'.[825] Crucially, the reference was to a boundary established through 'this Article', encompassing both a continental shelf limit drawn on distance to 200 nautical miles and one drawn to the outer edge of the continental margin beyond 200 nautical miles. Similarly, the Evensen proposal for this provision contained the following stipulation: '[a] boundary established in accordance with the provisions of this Article shall be permanent, and shall be indicated on appropriate charts'.[826] Once again, the reference to permanence appeared in conjunction with all boundaries established under the Article, which included continental shelf limits established on the basis of distance. Ultimately, these two proposals were merged into the compromise proposed by Ireland, which stated:

> The coastal State shall deposit with the Secretary General of the United Nations charts and relevant information, including geodetic data, permanently describing the outer limit of its Continental Shelf. The Secretary General shall give due publicity thereto.[827]

It was this version of the text that was ultimately endorsed by the Chairman of Negotiating Group 6 and incorporated into the Informal Composite Negotiating Text, finding its way into the final form of the LOSC.[828] At no point in this drafting history was it ever suggested that the term 'outer limit' only applied to the limit beyond 200 nautical miles. To the contrary, in its early form, it was made explicitly clear that all continental shelf limits were encompassed by this provision and were entitled to permanence. By basing itself on the Evensen Group's proposal and the USA's proposal, the Irish draft of this provision must be presumed to have kept this meaning intact. Indeed, even the ILA's Outer Continental Shelf Committee acknowledged that the drafting history of Article 76(9) suggests that it extends to the

[825] Nandan & Rosenne (n 70) 849.

[826] Ibid 850.

[827] Ibid 852.

[828] Ibid 863, 866, 870, 883.

continental shelf limit drawn based on distance to 200 nautical miles from the baseline.[829] In conclusion, the preparatory work, too, offers strong reasons to believe that Article 76(9) designates all continental shelf limits permanent, not just those beyond 200nm.

### B. 'Natural Prolongation' as the Basis for Permanence

Article 76(1) of the LOSC declares that the 'continental shelf of a coastal state comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory'. This expression offers strong evidence that the permanence alluded to in Article 76(9) extends to all continental shelf limits. The phrase 'natural prolongation', however, carries a fraught history of gradually eroding relevance. In the North Sea Continental Shelf cases, the ICJ described it as 'the most fundamental of all the rules of law relating to the continental shelf'.[830] In the Anglo-French arbitration, natural prolongation was reaffirmed to be a 'fundamental principle', but the Court noted that it was not to be 'treated as absolute' and that its effects could be mediated through law and equity.[831] In Tunisia/Libya, the Court observed that 'while the idea of the natural prolongation of the land territory defined, in general terms, the physical object or location of the rights of the coastal State, it would not necessarily be sufficient, or even appropriate, in itself to determine the precise extent of the rights of one State in relation to those of a neighbouring State'.[832]

In the Gulf of Maine case, the Chamber of the ICJ observed that the judgment in North Sea Continental Shelf cases was 'well known to have attributed more marked importance to the link between the legal institution of the continental shelf and the physical fact of the natural

[829] ILA (n 783) 17.

[830] North Sea Continental Shelf 23.

[831] Anglo-French Arbitration 92.

[832] Tunisia/Libya 46.

prolongation than has subsequently been given to it'.[833] In Libya/Malta, the ICJ went further, holding that due to 'the development which has occurred in the customary law of the continental shelf, and which is reflected in Articles 76 and 83 of the United Nations Convention on the Law of the Sea', the physical fact of natural prolongation no longer played any role up to 200 nautical miles.[834] In the Bay of Bengal case, the ITLOS concluded this process of attrition by stating that they found it 'difficult to accept that natural prolongation referred to in article 76, paragraph 1, constitutes a separate and independent criterion a coastal State must satisfy in order to be entitled to a continental shelf beyond 200 nm'.[835] In Somalia v. Kenya, the ICJ concurred with this statement, noting that entitlement to the continental shelf beyond 200 nm is to be determined solely by reference to the outer edge of the continental margin.[836] Even the CLCS has shown little deference to the natural prolongation criterion in assessing states' claims to a broad margin continental shelf.[837] This has led some writers to declare the demise of natural prolongation, holding it to be irrelevant for entitlement to the continental shelf under the LOSC.[838] Such pronouncements misunderstand the history and normative content of 'natural prolongation'.

This subsection will argue that 'natural prolongation' continues to play a significant role in entitlement to the continental shelf under the LOSC. While it serves as a poor criterion to determine the limits of the continental shelf, it still operates as a legal fiction that defines the ideological basis for such entitlement [**i**]. This is equally true for entitlement to the continental shelf up to 200 nautical miles from the baseline [**ii**]. It will then be demonstrated that

[833] Gulf of Maine 293.

[834] Libya/Malta 55.

[835] Bangladesh/Myanmar 113.

[836] Somalia v. Kenya (2021) 67.

[837] CLCS, Summary of Recommendations on Ascension Island (2010) 6.

[838] See e.g.: Lloyd, 'Natural Prolongation: Have the Rumours of its Demise been Greatly Exaggerated?' 3(3) African Journal of International and Comparative Law (1991) 558.

entitlement based on natural prolongation negates the possibility of an ambulatory limit [**iii**]. Through this, it will be argued that the permanence alluded to in Article 76(9) encompasses all continental shelf limits, even those that lie at 200 nautical miles from the baseline.

### i. The Duality of 'Natural Prolongation'

Throughout its history, the oft-misunderstood 'natural prolongation' rule has played a dual role. This duality can be gleaned even as far back as the North Sea Continental Shelf cases, where the Court used 'natural prolongation' in two distinct ways. The first role assigned to it was as a geological criterion to be employed in the delimitation of the continental shelf, where its function was notably underwhelming:

> The institution of the continental shelf has arisen out of the recognition of a physical fact; and the link between this fact and the law, without which that institution would never have existed, remains an important element for the application of its legal regime…[t]he appurtenance of the shelf to the countries in front of whose coastlines it lies, is therefore a fact, and it can be useful to consider the geology of that shelf in order to find out whether the direction taken by certain configurational features should influence delimitation…[839]

While the Court acknowledged that entitlement to the continental shelf originates through a geological concept, it seemed at pains to draw a clear line between the legal and geological continental shelf. It described the link between the geological fact of prolongation and the legal notion of the continental shelf as 'important' but considered them distinct. Indeed, it even explicitly admitted that the legal continental shelf would not always overlap with the physical shelf in the process of delimitation,[840] considering geology to be just one of several useful criteria to be considered in this endeavour. 'Natural prolongation' in the geological sense,

[839] North Sea Continental Shelf 51.

[840] Ibid 53.

therefore, seemed far removed from being 'the most fundamental of all the rules of law relating to the continental shelf'.[841]

In other portions of the judgment, however, the Court was tasked with considering natural prolongation as the ideological basis for entitlement to the continental shelf, determining the nature of rights possessed in the shelf and not the precise extent to which such rights extended. In carrying out this task, the Court noted:

> More fundamental than the notion of proximity appears to be the principle – constantly relied upon by all the Parties – of the natural prolongation or continuation of the land territory or domain, or land sovereignty of the coastal State, into and under the high seas, via the bed of its territorial sea which is under the full sovereignty of that State. There are various ways of formulating this principle, but the underlying idea, namely of an extension of something already possessed, is the same, and it is this idea of extension which is, in the Court's opinion, determinant. Submarine areas do not really appertain to the coastal State because – or not only because – they are near it. They are near it of course; but this would not suffice to confer title, any more than, according to a well-established principle of law recognized by both sides in the present case, mere proximity confers *per se* title to land territory. What confers the *ipso jure* title which international law attributes to the coastal State in respect of its continental shelf, is the fact that the submarine areas concerned may be deemed to be actually part of the territory over which the coastal State already has dominion, – in the sense that, although covered with water, they are a prolongation or continuation of that territory, an extension of it under the sea.[842]

There are two points to note in this discussion. First, 'natural prolongation' is considered by the Court to be 'fundamental' and 'determinant' in establishing the basis of title to the continental shelf and the nature of rights possessed therein. This is in sharp contrast to its role in delimitation, where the geological fact of prolongation is simply one of several useful factors to consider. Jia confirms this reading while commenting on a subsequent decision of the Court in Tunisia/Libya, noting that the 'cautious note sounded by the Court was in fact equivalent to saying that the notion of natural prolongation did not have the same degree of conclusiveness in the matter of delimitation as it had with respect to the basis of title, thus repeating its finding

[841] Ibid 23.

[842] Ibid 31.

to that effect in the North Sea Continental Shelf Cases'.[843] Purcell also notes, while discussing the drafting history of the LOSC, 'that natural prolongation was not always identified with a physical definition of the shelf' and 'to the extent that 'natural prolongation' was interpreted as a geomorphological concept, it was not only the expression but the content given to it that was new'.[844] She concludes by stating that 'all States supporting some reference to 'natural prolongation' in the treaty text understood that the concept was not independently determinative of the limits of the shelf, which required further definition'.[845] There is, consequently, a duality inherent within natural prolongation: as a fundamental concept that defines entitlement to the continental shelf, and as a reference to geological and geomorphological contiguity which play a limited role in delimitation.

Second, the Court also indicated that natural prolongation as the basis of title to the continental shelf is a legal fiction, describing it as the 'idea of extension', such that 'submarine areas…may be **deemed** to be actually part of the territory over which the coastal State already has dominion'.[846] Judge De Aréchega explains that equivalence between geological 'natural prolongation' and legal 'natural prolongation' in the North Sea Continental Shelf judgment would contradict the position taken by the Court on the 1958 Convention on the Continental Shelf:

> Such an interpretation would imply that the Court meant in 1969 to reject the existence of a continental shelf and to deny the exercise of continental shelf rights in those cases in which it could not be said (as in the cases of Chile and Norway) that there was a 'natural prolongation', in the geological or geomorphological sense, of the continental shelf beyond the shore. That would be attributing to the Court the intention, by using these terms, of revising or amending the definition contained in Article 1 of the 1958 Convention. This would be unthinkable, when it is also recalled that the same Judgment proclaimed that Article 1 represented a rule of customary international law. Consequently, it is not possible to interpret the term 'natural prolongation' in the 1969 Judgment as reintroducing into the

[843] Jia, 'The Notion of Natural Prolongation in the Current Regime of the Continental Shelf' 12 CJIL (2013) 79, 90.

[844] Purcell (n 120) 98.

[845] Ibid.

[846] North Sea Continental Shelf 31 [emphasis added].

> definition of the continental shelf the geological and geomorphological elements which had been left out by the International Law Commission in 1956 and by the Conference in 1958.[847]

This was also noted by Judge Oda:

> In fact, the use of the concept in the 1969 Judgment seems to have been widely misinterpreted…[i]n the context of the 1969 Judgment the outer limit of the continental shelf was not at issue, the North Sea being a shallow sea with the exception of the (irrelevant) Norwegian Trough, and thus the area beyond the 200-metre depth of water was not dealt with at that time. Just as the 1958 Convention on the Continental Shelf did not reveal any precise idea as to the outer limit of the continental shelf, so the 1969 Judgment did not attempt to define the outer limit, or the full expanse of the continental shelf, by use of the concept of 'natural prolongation'. No, that concept was used simply to justify the appurtenance to the coastal State of the continental shelf geographically adjacent to it.[848]

Paik states that 'natural prolongation' was formulated to serve as an alternative to occupation or express proclamation, 'to give a theoretical underpinning to the basic concepts of the continental shelf regime: first, inherency of the continental shelf right; and, second, the legal basis to the continental shelf entitlement'.[849] O'Connell and Hutchinson also support this conclusion.[850] Rothwell and Stephens acknowledge that this basis was necessary as 'it was highly desirable for there to exist an *ipso jure* entitlement to a continental shelf, as free access would promote a 'perilous scramble' by states seeking to assert and perfect title to an area that was otherwise res nullius'.[851] Purcell points out that even claims to a continental shelf based on distance or depth were grounded on the natural prolongation principle, further indicating that natural prolongation in its legal sense is a fiction.[852] It does not require actual geological

[847] Tunisia/Libya, Separate Opinion of Judge Aréchaga 112.

[848] Libya/Malta, Dissenting Opinion of Judge Oda 153.

[849] Paik, 'The Origin of the Principle of Natural Prolongation' in Castillo (ed), *Law of the Sea, from Grotius to the ITLOS* (2015) 583, 585.

[850] O'Connell, *The International Law of the Sea Vol. I* (1984) 482; Hutchinson, 'The Concept of Natural Prolongation in the Jurisprudence' 55(1) BYIL 133, 135.

[851] Rothwell & Stephens (n 138) 105.

[852] Purcell (n 120) 98.

or geomorphological continuity between the landmass of the coastal state and the area claimed as the continental shelf.

In this manner, natural prolongation, in its legal sense, was simply an ideological justification that enabled claims to the continental shelf on a basis other than occupation or control. This was precisely why the tribunal in the Anglo-French Arbitration noted that natural prolongation in the context of delimitation 'states the problem rather than solves it'.[853] In other words, it is the outcome of the delimitation exercise that is deemed to be the natural prolongation of the state, rather than the outcome of a 'natural prolongation' rule that would solve the process of delimitation. Indeed, the tribunal even juxtaposed 'natural prolongation' with other rules 'specifically directed to delimitation',[854] implying that the former had no role to play in this exercise. It then went on to specify, in clearer terms, the distinction between geological and legal natural prolongation first drawn in the North Sea Continental Shelf judgment:

> The continental shelf of the Channel Islands and of the mainlands of France and of the United Kingdom, in law, appertains to each of them as being the natural prolongation of its land territory under the sea. The physical continuity of the continental shelf of the English Channel means that geographically it may be said to be a natural prolongation of each one of the territories which abut upon it. The question for the Court to decide, however, is what areas of continental shelf are to be considered as *legally* the natural prolongation of the Channel Islands rather than of the mainland of France [emphasis in original].[855]

This distinction was also reiterated by the Chamber of the ICJ in the Gulf of Maine decision.[856]

Entitlement to the continental shelf, therefore, arises through a legal fiction that is loosely based on geological reality but, crucially, is not dependant on it. This duality of natural prolongation was initially preserved in cases such as Tunisia/Libya where the Court attempted

[853] Anglo-French Arbitration 49.

[854] Ibid.

[855] Ibid 91.

[856] Gulf of Maine 296.

to distance itself from the use of geological contiguity in delimitation, noting that 'while the idea of the natural prolongation of the land territory defined, in general terms, the physical object or location of the rights of the coastal State, it would not necessarily be sufficient, or even appropriate, in itself to determine the precise extent of the rights of one State in relation to those of a neighbouring State'.[857] The Court maintained a clear distinction between the legal notion of natural prolongation as the basis of title, and its geological connotation used in delimitation.[858]

Similarly, in Libya/Malta, the Court kept this distinction intact, observing that 'natural prolongation, which in spite of its physical origins has throughout its history become more and more a complex and juridical concept, is in part defined by distance from the shore, irrespective of the physical nature of the intervening sea-bed and subsoil'.[859] Acknowledging that the juridical concept of natural prolongation was distinct from its physical origins, the Court conceded that natural prolongation continued to define the basis for entitlement to continental shelf rights even though the physical fact of prolongation up to 200 nautical miles was irrelevant in delimitation proceedings.

However, over time, the unfortunate choice of phrasing employed by the ICJ in the North Sea Continental Shelf cases, using natural prolongation to describe both the legal basis of title to the continental shelf and the use of geological contiguity with the continental landmass in the process of delimitation, created unnecessary difficulties. As the utility of geological contiguity in delimitation began to erode through jurisprudence, it was mistakenly

[857] Tunisia/Libya 46.

[858] Though note that, even here, there were occasional misstatements and errors in keeping these two forms of natural prolongation separate. See, for instance, the Court's observations on Article 76(1) LOSC that 'the distance of 200 nautical miles is in certain circumstances the basis of the title of a coastal state': Tunisia/Libya 48. Although this statement was made in passing, and the court was not called upon to interpret Article 76(1), it does appear to confuse the ideological basis for entitlement (natural prolongation) with the method of measuring the extent of that entitlement (distance to 200 nautical miles). This will be explained further in section ii below.

[859] Libya/Malta 33.

presumed that this fate also extended to the legal notion of natural prolongation. In the Bay of Bengal case, for instance, the ITLOS ruled that the geological fact of prolongation cannot be considered 'a separate and independent criterion a coastal State must satisfy in order to be entitled to a continental shelf beyond 200 nm'.[860] Instead, it was the outer edge of the continental shelf, as defined in Article 76(4), that was the 'essential element' for such claims.[861] This conclusion is consistent with the argument offered by this section, whereby natural prolongation as a geological criterion in delimitation offers limited utility, but natural prolongation as a legal fiction for justifying entitlement to the continental shelf remains central. However, the ITLOS then went on to hold that 'the notion of natural prolongation and that of continental margin under article 76, paragraphs 1 and 4, are closely interrelated. They refer to the same area.'[862] This conclusion can be disputed. Not only does it ignore the wording of Article 76 which considers these concepts to be separate, it also clubs together natural prolongation as a legal concept with geological and geomorphological factors employed in delimitation. Although this might seem intuitive, it is incorrect.

The ILA's Outer Continental Shelf Committee made the same error in its 2006 Report:

> Article 76(1) of the Convention refers to the natural prolongation of the land territory to define the continental shelf. To establish which areas are comprised by the reference to natural prolongation, the starting point is the land territory. The connection between the land territory and the natural prolongation can be geomorphological and/or geological. One of the implications of the definition of the continental shelf by reference to natural prolongation is that the continental shelf may consist of areas that are either continental and/or oceanic in origin'.[863]

The Committee seemed to misconstrue the legal notion of natural prolongation, found in Article 76(1) of the LOSC, as a geological or geomorphological fact that controlled the physical

[860] Bangladesh/Myanmar 113.

[861] Ibid 112.

[862] Ibid 113.

[863] ILA (n 783) 3.

extent to which continental shelf rights may be claimed, rather than a fictitious explanation for entitlement to such rights. The Committee is hardly alone in this regard. Parson equates natural prolongation to geological and geomorphological attributes that imply physical contiguity between the landmass and the shelf while dismissing its relevance in current times.[864] Judge Sette-Camara states that 'natural prolongation is a fact of nature, so that geography cannot be ignored when trying to identify the continental shelf of a given country'.[865] Similarly, Judge Gao is only half-correct when he clubs these notions together, asserting '[i]t is my firm view that natural prolongation retains its primacy over all other factors and that legal title to the continental shelf is based solely on geology and geomorphology'.[866] Kim argues that one must seek geological continuity while proving the existence of natural prolongation.[867] Similarly, Jia argues that one must consider geological and geomorphological factors even whilst claiming entitlement to a continental shelf to 200 nautical miles since Article 76(1) asserts that such entitlement is based on natural prolongation.[868] Each of these scholars overlooks the duality of natural prolongation as a fundamental concept that defines entitlement to the continental shelf, and as a reference to geological and geomorphological continuity. While its latter role has certainly been diminished through jurisprudence and the practice of the CLCS, its former role continues to be vital even for claims to a continental shelf up to 200 nautical miles from the baseline.

### ii. Natural Prolongation as the Basis for Entitlement up to 200 Nautical Miles

Article 76(1) of the LOSC provides that:

[864] Parson, 'Article 76' in Proelss (n 72) 592-4.

[865] Libya/Malta, Separate Opinion of Vice President Sette-Camara 63.

[866] Bangladesh/Myanmar, Separate Opinion of Judge Gao 226.

[867] Kim, 'Natural Prolongation: A Living Myth in the Regime of the Continental Shelf?' 45(4) ODIL (2014) 374, 379.

[868] Jia (n 843) 92-3.

> The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.

As demonstrated in the Bay of Bengal decision[869] and argued by Purcell,[870] Article 76 does not employ 'natural prolongation' as a criterion in delimiting the extent of the continental shelf. It opts, instead, to employ the 'outer edge of the continental margin' as the geological and geomorphological criterion for this process. That a reference to natural prolongation persists in Article 76(1) suggests, therefore, that this can only be a reference to the legal notion of natural prolongation. It exists merely to reiterate the fictitious basis for such entitlement and not to circumscribe the physical space over which it extends.

There are, nonetheless, two ways to construe the reference to 'natural prolongation' within this provision. The first interpretation is that this phrase applies to claims based both on distance and the outer edge of the continental margin, such that Article 76(1) can be read as:

> The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory
>
> a. to the outer edge of the continental margin, or
> b. to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.

The second interpretation is that natural prolongation only serves to justify claims based on the outer edge of the margin, and does not apply to claims based on distance, such that Article 76(1) is to be read as:

> The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea

[869] Bangladesh/Myanmar 112-3.

[870] Purcell (n 120) 98.

a. throughout the natural prolongation of its land territory to the outer edge of the continental margin, or
b. to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.

It is submitted that the first of these two interpretations is correct. As discussed in the previous section, the legal notion of natural prolongation was created to validate ab initio and ipso iure claims to the shelf. It was a means to justify entitlement through inherency rather than occupation or proclamation. Article 77 of the LOSC clarifies that the rights of the coastal state over the continental shelf to a distance of 200 nautical miles are also inherent and 'do not depend on occupation, effective or notional, or on any express proclamation'. These terms are interwoven with natural prolongation, as made clear in the North Sea Continental Shelf cases, and strongly suggest that natural prolongation continues to justify claims to the continental shelf up to 200 nautical miles.

Moreover, Judge Mbaye, in her Separate Opinion in Libya/Malta, argued that the first interpretation better represented the ordinary meaning of Article 76(1):

> Paragraph 1 of Article 76 of the 1982 Convention founds a State's title to continental shelf on the principle of the natural prolongation of its land territory…[t]his principle of natural prolongation, according to Article 76, can be applied in two ways: either by means of the rule of the 'outer edge of the continental margin', or by means of the '200-mile' rule. This is what is meant by the rest of the sentence: 'to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance'. Thus the 200-mile rule (or the 'distance principle'), far from contradicting the principle of natural prolongation, in fact completes it, as it is also completed by the rule of the 'outer edge of the continental margin'. To express the same idea in another way, we can say that a coastal State has a right to the continental shelf because it is the natural prolongation of its land territory, and that this right is measured by reference to a geophysical fact (the outer edge of the continental shelf) or an arithmetical fact (the 200-mile distance).[871]

This argument was also confirmed by the majority decision of the ICJ in Libya/Malta:

> It follows that, for juridical and practical reasons, the distance criterion must now apply to the continental shelf as well as to the exclusive economic zone; and this quite apart from the provision as to distance in paragraph 1 of Article 76. This is not to suggest that the idea of natural prolongation is

[871] Libya/Malta, Separate Opinion of Judge Mbaye 97.

> now superseded by that of distance. What it does mean is that where the continental margin does not extend as far as 200 miles from the shore, natural prolongation, which in spite of its physical origins has throughout its history become more and more a complex and juridical concept, is in part defined by distance from the shore, irrespective of the physical nature of the intervening sea-bed and subsoil. The concepts of natural prolongation and distance are therefore not opposed but complementary; and both remain essential elements in the juridical concept of the continental shelf.[872]

This is why Jensen and Thamsborg argue that 'natural prolongation…still has a role to play in respect of title to shelf areas within as well as exceeding 200 nm, a role which over the years has changed gradually in a more and more legal (abstract) direction to the disregard of its physical origin and intended effect'.[873] Jia also offers support to this interpretation, noting that within 200nm 'there is identity between natural prolongation and the judicial continental shelf'.[874] The Virginia Commentary similarly notes that this definition 'employed the notion of the continental shelf as the 'natural prolongation' of a coastal State's land territory, including where it extends beyond 200 miles', describing it as 'a legal abstraction'.[875] The use of the word 'including' suggests the belief of the writers that the phrase natural prolongation also applied to the continental shelf where it did not extend beyond 200 nautical miles.

Liao observes that 'distance is one expression of the legal concept of natural prolongation…[t]he outer edge of the continental margin represents the other expression, which is a physical one'.[876] This is also why the arbitral tribunal in Barbados v. Trinidad & Tobago concluded that 'the concept of distance as the basis of entitlement [has become] increasingly intertwined with that of natural prolongation'.[877] Similarly, the tribunal in the

[872] Libya/Malta 33.

[873] Jensen and Thamsborg, 'Role of Natural Prolongation in Relation to Shelf Delimitation' 64 Nordic Journal of International Law (1995) 619, 625.

[874] Jia (n 843) 100.

[875] Nandan & Rosenne (n 70) 846, 873.

[876] Liao, 'Is There a Hierarchical Relationship between Natural Prolongation and Distance in the Continental Shelf Delimitation' 33 IJMCL (2018) 79, 88.

[877] Barbados v. Trinidad & Tobago 211.

delimitation between Guinea and Guinea-Bissau supported this interpretation of Article 76(1), noting that the provision introduced a 'second rule for determining the continental shelf by reference to distance, without derogating from the rule of natural prolongation'.[878] This interpretation was also supported by Judge Shahabuddeen in his Separate Opinion in the Jan Mayen case.[879]

Admittedly, there are some who support the second interpretation of Article 76(1) described above. Nonetheless, their writing reveals an erroneous insistence that natural prolongation must carry a geological or geomorphological meaning, contrary to its history described in the preceding section. Kim, for instance, suggests that the second interpretation is the more appropriate one since it better represents the ordinary meaning of 'natural prolongation'.[880] According to him, 'natural means 'existing or present by nature,' 'inherent in the very constitution of a person or thing,' or 'innate'', which suggests that '[n]atural prolongation must be related to the physical characteristics of the continental shelf'.[881] However, this overlooks the origins of the term and the manner in which it has been applied by courts. Similarly, commenting on the Libya/Malta decision quoted above, Lloyd concludes that the Court 'sought to resolve the natural prolongation/distance debate by giving both concepts a role: distance is predominant for the first 200 miles from the baselines and, if there is any further continental shelf, natural prolongation operates'.[882] However, the decision expressly noted that there was no 'natural prolongation/distance debate' since the two notions were not contradictory.[883] Rather, natural prolongation was defined by distance up to 200 miles

[878] Guinea/Guinea-Bissau 300.

[879] Jan Mayen, Separate Opinion of Judge Shahabuddeen 166.

[880] Kim (n 867) 379.

[881] Ibid.

[882] Lloyd (n 838) 560.

[883] Libya/Malta 33.

from the baseline.[884] Llloyd presumes that natural prolongation carries a physical meaning and is therefore at odds with entitlement through distance. Similar oversights can also be found in the reports of the ILA's Outer Continental Shelf Committee,[885] in the decisions of Judges Sette-Camara[886] and Gao,[887] and in the writing of Paik,[888] Parson,[889] Wenxian and others.[890] Nonetheless, for the reasons described above, entitlement to the continental shelf is premised on the legal fiction of natural prolongation even where it extends to 200 nautical miles from the baseline. This is important because it signifies that all continental shelf limits are permanent and incapable of ambulation, not just those beyond 200 nautical miles.

### iii. Natural Prolongation Negates Ambulation

There are certain consequences that arise when an entitlement is based on the idea, however fictitious, of territorial prolongation and inherency as opposed to mere distance. A coastal state's territorial sea, contiguous zone and exclusive economic zone appertain to it as a consequence of their proximity to the coast, represented mathematically through the baseline. As a result, when the baseline moves, the areas proximate to it are altered and this impacts the scope of the entitlement. Entitlement to a continental shelf is different; it arises through continuity and not contiguity. The seabed and subsoil that appertain to a coastal state as part of its continental shelf do so not because they lie proximate to the baseline but because they are deemed to be a part of the territory of the coastal state. The length to which this prolongation extends may be measured, under certain circumstances, through distance from the baseline.

[884] Ibid.

[885] ILA (n 783) 3.

[886] Libya/Malta, Separate Opinion of Vice President Sette-Camara 63.

[887] Bangladesh/Myanmar, Separate Opinion of Judge Gao 226.

[888] Paik (n 849) 585.

[889] Parson (n 864) 592-4.

[890] Wenxian et al, 'Effect of Natural Prolongation with Geological Features on Maritime Delimitation' 36(2) Acta Oceanologica Sinica (2017) 35.

However, unlike other zones where this measure of distance itself provides the rationale for the entitlement, with the continental shelf this measure of distance is simply used to implement the legal fiction of prolongation. It is the argument of this section that this is a one-time operation not subject to revision. The area that falls within this measurement is deemed to be a protrusion of the territory of the coastal state once and for all, and it is on this basis that the coastal state possesses sovereign rights over the seabed.

That entitlement based on natural prolongation is not subject to revision can be gleaned through several excerpts of the North Sea Continental Shelf cases. While discussing the process of delimiting a continental shelf, the Court made the following observation:

> It follows that even in such a situation as that of the North Sea, the notion of apportioning an as yet undelimited area, considered as a whole (which underlies the doctrine of the just and equitable share), is quite foreign to, and inconsistent with, the basic concept of continental shelf entitlement, according to which the process of delimitation is essentially one of drawing a boundary line between areas which already appertain to one or other of the States affected. The delimitation itself must indeed be equitably effected, but it cannot have as its object the awarding of an equitable share, or indeed of a share, as such, at ail,-for the fundamental concept involved does not admit of there being anything undivided to share out. Evidently any dispute about boundaries must involve that there is a disputed marginal or fringe area, to which both parties are laying claim, so that any delimitation of it which does not leave it wholly to one of the parties will in practice divide it between them in certain shares, or operate as if such a division had been made. But this does not mean that there has been an apportionment of something that previously consisted of an integral, still less an undivided whole.[891]

The Court painstakingly clarifies that a consequence of the prolongation principle is that the act of delimitation is presumed to extend temporally backward, such that the area delimited as the continental shelf of a coastal state is not portioned out of 'an as yet undelimited area' but is considered to have always belonged to the coastal state.[892] Entitlement to the continental

[891] North Sea Continental Shelf 22.

[892] The decision in Ghana/Côte D'Ivoire, endorsed by the ICJ in Somalia v. Kenya (2021), could appear to be at odds with this statement. However, crucially, there, the ITLOS did not state that delimitation of the continental shelf was entirely constitutive, such that the ab initio nature of rights in the shelf was negated. Indeed, such a conclusion would have conflicted with Article 77(3) LOSC. The ITLOS only noted that delimitation of the continental shelf *also* possessed a 'constitutive nature' and was not 'merely declaratory': Ghana/Côte D'Ivoire 158. This statement does not displace the atemporal character of the continental shelf. It simply notes that the fiction of atemporality can only be triggered once the delimitation exercise is completed to ensure, as a practical measure, that coastal states do not incur legal responsibility for prior acts carried out in contested areas of the shelf that, following delimitation, are deemed to part of another coastal state's jurisdiction ipso iure and ab initio.

shelf, therefore, is atemporal. It does not fluctuate or vary with time. Once delimited, that continental shelf is deemed to have always existed and to always exist. This atemporality is reiterated by the Court when it describes the natural prolongation principle in the following manner:

> There are various ways of formulating this principle, but the underlying idea, namely of an extension of something already possessed, is the same, and it is this idea of extension which is, in the Court's opinion, determinant. Submarine areas do not really appertain to the coastal State because - or not only because - they are near it. They are near it of course; but this would not suffice to confer title, any more than, according to a well-established principle of law recognized by both sides in the present case, mere proximity confers per se title to land territory. What confers the ipso jure title which international law attributes to the coastal State in respect of its continental shelf, is the fact that the submarine areas concerned may be deemed to be actually part of the territory over which the coastal State already has dominion, in the sense that, although covered with water, they are a prolongation or continuation of that territory, an extension of it under the sea.[893]

Judge Rivero's Separate Opinion offers further analysis of why entitlement to the continental shelf is independent of fluctuations in the baseline. While considering the equidistance criterion in Article 6 of the Convention on the Continental Shelf, he reasons the low-water line, a 'changeable and irregular surface element…does not seem to be the most appropriate point for defining the starting-point for a land mass such as the continental shelf'.[894] He notes that a limit measured from the low-water mark in this manner would be 'variable, capricious and, furthermore, foreign to the concept of the continental shelf'. Admittedly, this decision was published many years before the drafting of the LOSC, which permits the use of the low-water line in determining the scope of a coastal state's continental shelf. Nonetheless, the reasoning provided here is still persuasive in understanding why this measurement of distance under Article 76(1) of the LOSC differs from those carried out for other entitlements. Once a certain area of the seabed is deemed to be part of the land mass of a coastal state through Article 76(1), it cannot remain dependent on fluctuations of the low-water mark. Such

[893] North Sea Continental Shelf 31.

[894] North Sea Continental Shelf, Separate Opinion of President Rivero 59.

fluctuations only represent movements between the interface of land and sea. They cannot alter areas that have already been deemed to be protrusions of land. This was also indicated by Judge Tanaka in his Dissenting Opinion:

> …so far as the coastal frontage is concerned, this imaginary line cannot be recognized as a basis for the delimitation of the continental shelf of the States concerned, the sea area being unable to be treated identically with a solid land-mass from the concept of the continental shelf, namely the natural prolongation or continuation of the land territory of the coastal State.[895]

The ICJ made the permanence of the continental shelf abundantly clear in the Aegean Sea Continental Shelf case:

> The dispute relates to the determination of the respective areas of continental shelf over which Greece and Turkey are entitled to exercise the sovereign rights recognized by international law. It is therefore necessary to establish the boundary or boundaries between neighbouring States, that is to say, to draw the exact line or lines where the extension in space of the sovereign powers and rights of Greece meets those of Turkey. Whether 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.
>
> …a dispute regarding entitlement to and delimitation of areas of continental shelf tends by its very nature to be one relating to territorial status. The reason is that legally a coastal State's rights over the continental shelf are both appurtenant to and directly derived from the State's sovereignty over the territory abutting on that continental shelf. This emerges clearly from the emphasis placed by the Court in the North Sea Continental Shelf cases on 'natural prolongation' of the land as a criterion for determining the extent of a coastal State's entitlement to continental shelf as against other States abutting on the same continental shelf…[i]n short, continental shelf rights are legally both an emanation from and an automatic adjunct of the territorial sovereignty of the coastal State. It follows that the territorial régime-the territorial status-of a coastal State comprises, ipso jure, the rights of exploration and exploitation over the continental shelf to which it is entitled under international law. A dispute regarding those rights would, therefore, appear to be one which may be said to 'relate' to the territorial status of the coastal State.[896]

While noting that entitlement to a continental shelf is a question of territorial status, the Court noted that the boundary of a continental shelf was subject to the same considerations of permanence and stability that one drawn on land would be. Indeed, references to permanence and atemporality can also be found in Article 6(3) of the Convention on the Continental Shelf, which provides that '[i]n delimiting the boundaries of the continental shelf, any lines which are

[895] North Sea Continental Shelf, Dissenting Opinion of Judge Tanaka 190.

[896] Aegean Sea Continental Shelf 35-6.

drawn in accordance with the principles set out in paragraphs 1 and 2 of this article should be defined with reference to charts and geographical features as they exist at a particular date, and reference should be made to fixed permanent identifiable points on the land'. The ILC's Study Group on Sea-level Rise considers this proof of the permanency of continental shelf limits.[897] Mossop also notes that 'the rights of the coastal State [in the continental shelf] amounted to an inherent, exclusive and permanent title due to the prolongation of its land territory'.[898] Indeed, this proposition finds wide support in scholarship.[899] It is therefore submitted that the reference to permanence in Article 76(9) must necessarily encompass both the limit at 200 nautical miles and the one beyond, since entitlement to the continental shelf hinges on the concept of natural prolongation; a concept that negates the possibility of ambulatory limits.

### C. The Trigger for Permanence

It is apt to discuss, briefly, the precise point at which the permanence described in Article 76(9) is initiated since this has been the subject of much confusion. Article 76(9) requires the coastal state to 'deposit with the Secretary-General of the United Nations charts and relevant information, including geodetic data, permanently describing the outer limits of its continental shelf'. This has led some to conclude that it is the act of depositing the charts with the Secretary-General which produces the permanence. Hayashi, for instance, suggests that coastal states 'may unilaterally deposit these materials with the Secretary-General' to generate permanent limits for the continental shelf that 'will not be affected by future shifts of its baseline or by its disappearance (such as by the submersion of islands)'.[900] Similarly, the ILC's Study Group on Sea-level Rise notes that the description of the outer limits acquires permanence only once the

[897] Aurescu & Oral (n 21) 26.

[898] Mossop (n 626) 56.

[899] See, for instance: Soons (n 19); Schofield (n 19); Hayashi (n 19); Powers & Stucko (n 625); Magnusson (n 762); Busch (n 656).

[900] Hayashi (n 642) 7.

coastal state deposits the relevant information with the Secretary-General and not before.[901] Powers and Stucko also adopt the same position.[902]

However, to confer permanence through the act of depositing charts and co-ordinates undermines the ordinary meaning of Article 76(9). The provision does not describe permanence as a consequence of this act but as an independent feature of the continental shelf limit that must be adhered to while depositing charts. Such writing also places too much emphasis on the coastal state's unilateral delineation of its limits, essentially rendering it impervious to challenge. It is important, here, to point out that not all limits covered by Article 76(9) fall within the ambit of Article 76(8).[903] This means that a coastal state may also deposit limits under Article 76(9) that have been established entirely through its own discretion and have not been subject to any process of review by the CLCS.[904] To confer permanence on such limits without paying heed to responses from the international community neglects established jurisprudence. As noted by the ICJ in the Anglo-Norwegian Fisheries case:

> The delimitation of sea areas has always an international aspect; it cannot be dependent merely upon the will of the coastal State as expressed in its municipal law. Although it is true that the act of delimitation is necessarily a unilateral act, because only the coastal State is competent to undertake it, the validity of the delimitation with regard to other States depends upon international law.[905]

Similarly, in the Gulf of Maine decision it was held that 'any delimitation of the continental shelf, or any delineation of its outer limits…effected unilaterally by one State regardless of the views of the other State or States concerned…is in international law not opposable to those states'.[906]

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[901] Aurescu & Oral (n 21) 26.

[902] Powers & Stucko (n 625) 128-9.

[903] ILA (n 654) 24.

[904] Ibid.

[905] Anglo-Norwegian Fisheries 132.

[906] Gulf of Maine 292.

To overcome this difficulty, Wolfrum argues that the Secretary-General of the United Nations is to play a quasi-judicial role, whereby they can reject the submission of charts and coordinates that do not conform to Article 76 of the LOSC and deny giving them publicity.[907] This argument finds scant support in the language of the provision and clearly contradicts the manner in which the provision has been applied in practice.[908] As McDorman points out, 'Article 76(9) must be treated as placing upon the Secretary-General a responsibility similar to that of a treaty depositary, which means that the Secretary-General will accept all submitted materials with no legal consequences attaching to such acceptance'.[909]

The better interpretation of the trigger for permanence is the one offered by the ILA's Outer Continental Shelf Committee, 'that the inclusion of the term 'permanently' in article 76(9) does not imply that the limits of the continental shelf become permanently fixed by the mere fact that the coastal State has deposited the required information'.[910] Instead, according to the Committee, such permanence only arises '[i]f other States do not protest the outer limit lines on which information is deposited'.[911] Magnússon also offers a similar interpretation, noting 'that the established outer limits [of the continental shelf] are not alterable and are supposed to have perpetual effect so long as the limits are submitted to the Secretary-General and publicity given thereto, following a reasonable time period no protest or objection is registered'.[912] Other scholars also lend support to this position.[913]

[907] Wolfrum (n 652).

[908] See the state practice discussed in section A above, where information deposited with the Secretary General under Article 76(9) was published directly and not subject to scrutiny.

[909] McDorman (n 663) 316.

[910] ILA (n 783) 18.

[911] Ibid.

[912] Magnússon (n 762) 92-3.

[913] Nelson (n 660) 418; Jia (n 666) 112-3.

This interpretation of the trigger for permanence fits neatly with the argument of this Chapter. Permanence is an integral feature of all continental shelf limits since it is intrinsically connected with the notion of natural prolongation, found in Article 76(1). There are, nonetheless, two channels to acquire permanence for the continental shelf limit. Article 76(8) offers an incentivised route, whereby permanence can be achieved at an accelerated rate by engaging with the CLCS. However, this provision is meant to be a carrot and not a stick; it does not prevent a coastal state from attaining permanence through the ordinary route of acceptance and acquiescence by the international community which is followed for all other limits. It is this route that is encapsulated within Article 76(9), which requires coastal states to deposit information describing their continental shelf limits with the Secretary-General of the UN. It is only once such information is publicised and faces no objections that the permanent description of the continental shelf limits referenced in Article 76(9) becomes opposable to third states.

## IV. The Precarity of Permanence

From the preceding discussion, it is apparent that Article 76 offers useful tools to threatened coastal states seeking to enhance the resilience of their continental shelf limit. However, before concluding this Chapter, it is equally necessary to contemplate the finite bounds within which such resilience subsists to properly understand the qualified utility of this legal provision. The enduring permanence of the continental shelf limit remains precarious in the face of sea-level rise.

This is not a fact often acknowledged in scholarship on the subject. Soons, for instance, supports the conclusions that the continental shelf limit remains fixed in perpetuity, irrespective of the scale of coastal change:

> A remarkable situation again arises with respect to the limits of the continental shelf in the case of a disappearing island. As a consequence of the provision in Article 76, paragraph 9 of the Law of the Sea

> Convention already mentioned, the outer limit of the continental shelf may be permanently fixed. Once the outer limit of the continental shelf has been established at a distance of 200 nautical miles (or even more) from an island, which island then subsequently disappears entirely, the coastal State would maintain sovereign rights over a seabed area (which may be of considerable extent), while the object which generated these sovereign rights no longer exists.[914]

Hayashi also adopts this position, noting that once a continental shelf's limits have been established 'these limits will not be affected by future shifts of its baseline or by its disappearance (such as by the submersion of islands)'.[915] In similar fashion Busch observes:

> The starting point of this discussion is an understanding that, when ocs limits are established in accordance with Article 76(8) and registered in charts in the form of fixed points and coordinates, they will remain the same unaffected by, for example, possible sea level changes or other factors affecting the sea-bed or land territory forming the basis for the ocs entitlement. Such limits are permanent.[916]

The ILA's Outer Continental Shelf Committee asserts that third states 'may no longer challenge an outer limit line that has become final and binding, even if the parameters on which it is based, such as the baseline, change'.[917] This statement is not qualified by any reference to the degree of change involved. Magnússon posits that the procedures outlined in Article 76 are 'intended to result in permanent limits between the continental shelf and the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction' without considering the parameters of such permanence.[918]

Yet, no clear reasons are available to justify this far-reaching interpretation of permanence. This point was raised by the ILC's Study Group on Sea-level Rise:

> If the outer boundaries of the continental shelf were to shift landward as a result of a change in the baseline from which the breadth of the territorial sea is measured under the Convention, this could have consequences for the coastal State in the exercise of its rights to explore and exploit natural resources. However, that scenario seems unlikely in the light of paragraph 9 of article 76 of the Convention

[914] Soons (n 19) 218-9.

[915] Hayashi (n 642) 7.

[916] Busch (n 656) 315.

[917] ILA (n 654) 23.

[918] Magnússon (n 762) 17.

> providing for permanency…[h]owever, the question is whether islands that disappear due to sea-level rise or become rocks under paragraph 3 of article 121 of the Convention, as discussed in Part Three above, could lose their entitlement to a continental shelf. If so, this would mean that large swathes of continental shelf would become part of the Area and subject to the common heritage of mankind regime.[919]

Although the Commission acknowledges the possibility that the permanence described in Article 76 is qualified by restrictions, and might not survive the extinction of the landmass from which the continental shelf limits are derived, it does not offer any conclusion on this question.[920]

There are strong reasons to believe that entitlement to a continental shelf cannot outlive the submersion of the landmass from which entitlement is derived. As demonstrated in the preceding section, entitlement to the continental shelf is defined by the natural prolongation principle.[921] This is acknowledged by Article 76(1) of the LOSC. Where the entire landmass in question is submerged, there is no longer anything left to prolong and thus the entitlement itself is terminated. When the original source of sovereignty is extinguished, sovereign rights in surrounding areas must necessarily perish.

This can be gleaned through numerous references to the 'land dominates the sea' principle in scholarship and judicial decisions.[922] It is also heavily implied by Article 121 of the LOSC, which states that islands that are 'above water at high tide' are equated to 'other land territory', capable of producing entitlement to a continental shelf. On the other hand, low-

[919] Aurescu & Oral (n 21) 64.

[920] Ibid 64.

[921] Admittedly, as argued in the preceding section, the notion of natural prolongation is a legal fiction independent of geological reality. This might lead some to argue that, even on permanent submersion of the landmass, the prolongation continues to survive through this fiction. Though fascinating, this argument suffers from a fatal flaw; while the prolongation of land territory has repeatedly been described as a fiction, or as something that is 'deemed', no such suggestion is ever made for the land territory itself. Indeed, throughout the history of the legal continental shelf, the need for an actual physical landmass has remained unwavering. See, e.g.: Gulf of Maine 312.

[922] See, generally: Jia (n 57); Gulf of Maine 312.

tide elevations and rocks produce no such rights. Indeed, in Qatar v. Bahrain, the ICJ expressly noted that the rules of international law 'do not justify a general assumption that low-tide elevations are territory in the same sense as islands'.[923] In the Territorial and Maritime Dispute case between Nicaragua and Colombia, the Court went on to note that '[i]t is well established in international law that islands, however small, are capable of appropriation' however '[b]y contrast, low-tide elevations cannot be appropriated'.[924] This was reiterated by the ICJ in the Pedra Branca case between Malaysia and Singapore,[925] and adopted by the ITLOS in the Bay of Bengal maritime delimitation.[926] Schofield and Schofield conclude that 'ltes cannot be appropriated, that is being subject to a claim to sovereignty analogous to an area of land territory'.[927] This discussion suggests that when the landmass from which a continental shelf entitlement is derived becomes submerged at high tide, it can no longer be the subject of territorial sovereignty and is therefore precluded from continuing to generate continental shelf rights in the seabed and subsoil that surrounds it. This extinction of continental shelf entitlement may also occur prior to submersion at high tide, where islands lose their capacity to 'sustain human habitation or [an] economic life of their own'.[928] As Charney explains, the assessment of status as an island, rock and low-tide elevation for the purposes of Article 121 is not meant to be a one-time operation and requires revision in the face of geographic change.[929] Thus, while the limits of a continental shelf established by a coastal state are fixed in the face

[923] Qatar v. Bahrain 102.

[924] Territorial and Maritime Dispute 641.

[925] Malaysia/Singapore 100-101.

[926] Bangladesh/Myanmar 44-5.

[927] Schofield & Schofield, 'Testing the Waters' 1 Asia Pacific Journal of Law and Policy (2016) 37, 62

[928] Article 121 LOSC.

[929] Charney, 'Rocks that Cannot Sustain Human Habitation' 93(4) AJIL 863.

of sea-level rise, the entitlement itself is not capable of surviving large-scale changes to the landmass from which it is derived.

Moreover, it is worth acknowledging that, even where coastal retreat is not of a sufficient scale to extinguish coastal state entitlement to a continental shelf, the rights of the coastal state within that continental shelf may be subject to flux as a consequence of sea-level rise. This is because the revenue-sharing obligations of a coastal-state, located in Article 82 of the LOSC, are contingent on movements of the baseline. This provision stipulates that:

> The coastal State shall make payments or contributions in kind in respect of the exploitation of the non-living resources of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

As demonstrated in Chapter 2, the normal baseline is subject to ambulation with coastal retreat. This means that any line or limit measured from this baseline is also presumed to ambulate as a result of sea-level rise. Understandably, this presumption can be rebutted in exceptional circumstances, where clear language is present in the LOSC to demonstrate the fixity of the measured line. It was argued in the preceding sections of this Chapter that such language can be found in Article 76(8) and (9) to support the resilience of the continental shelf limit. Notably, however, unlike the provisions on the continental shelf limit that describe it as 'final', 'binding', 'fixed' and 'permanent', there is no suggestion in the text of the treaty that the assessment of the 200nm line in Article 82 is a one-time operation that remains static in perpetuity. Moreover, as Mossop argues, this line is also not tethered in place by the idea of 'natural prolongation', as the continental shelf limit is.[930] Instead, by making this assessment contingent on a fluctuating baseline, it seems more appropriate to describe the area within which the coastal state has revenue-sharing obligations as variable. Indeed, in the absence of evidence to the contrary, the presumption of ambulation described in Chapter 2 must be

[930] Mossop (n 626) 89.

considered the norm. When faced with sea-level rise, therefore, the line that delineates the area beyond 200nm can retreat, thereby expanding a coastal state's revenue sharing obligations. For these reasons, the rights and obligations possessed by a coastal state in relation to the continental shelf are not impervious to the effects of coastal retreat. They can fluctuate and, in cases of extreme sea-level rise, be extinguished in entirety.

## Conclusion

This Chapter examined the utility of Article 76 LOSC as a means to stabilise continental shelf limits threatened by sea-level rise. It began by describing current scholarship on this subject, demonstrating that most arguments in favour of permanent continental shelf limits neglect to offer separate analysis on the terms 'final and binding' in Article 76(8) and 'permanently describing' in Article 76(9). Instead, these terms are often presumed to imply the same thing: that continental shelf limits, once established, remain fixed. Insufficient attention is paid to their distinct triggers. The parties to whom they are directed are rarely considered. That these terms apply to all continental shelf limits is routinely presumed despite arguments to the contrary. The resilience implied by these terms is presumed to be perpetual, unaffected by large-scale sea-level rise. This Chapter addressed each of these issues in turn.

It was postulated that the finality described in Article 76(8) is a distinct and accelerated route to stable continental shelf limits from that found in Article 76(9). The former arises immediately after limits are established on the basis of CLCS recommendations and does not require acquiescence from the international community while the latter does. It was demonstrated that the terms 'final and binding' in Article 76(8) are directed at all parties to the LOSC and not just the coastal state. This reading was shown to be more consistent with the text and structure of the continental shelf provisions within the LOSC and supported by the treaty's preparatory work. Next, the Chapter argued that the permanence described in Article

76(9) was not restricted solely to continental shelf limits that lie beyond 200nm from the baseline but also protected those that lie at this distance. This interpretation was confirmed by reference to the text and context of the provision, the preparatory work of the treaty and the concept of natural prolongation found in Article 76(1).

Finally, the parameters to the resilience of the continental shelf limit were studied. It was concluded that while the limit remains fixed over time, the entitlement itself can be extinguished where the landmass from which it is derived becomes submerged at high tide or, in the case of islands, loses its capacity to 'sustain human habitation or [an] economic life of their own'. Moreover, it was shown that, even in cases where the limit of continental shelf remains unaffected by sea-level rise, movements in the baseline may still necessitate changes to the revenue-sharing obligations of the coastal state as per Article 82 of the LOSC. Through this discussion, it can be concluded that Article 76 of the LOSC offers significant utility to a threatened coastal state seeking to preserve its continental shelf limits. However, it must simultaneously be acknowledged that this utility is finite; it is an unfortunate truth that sea-level rise will still have a notable detrimental impact on the economic security offered by the continental shelf for several coastal states.

# Chapter 6

# The Stability of Delimited Boundaries

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## Introduction

Chapter 2 demonstrated that baselines, and entitlement limits measured from them, ambulate with sea-level rise. Chapters 3 and 4 were concerned with measures that could be used to temporarily tether an ambulating baseline in place, to defer the legal effects of sea-level rise. Chapter 5 argued, exceptionally, that even where the baseline cannot be tethered in this fashion, the limit of the continental shelf is not subject to revision and is resilient to the effects of sea-level rise. This Chapter considers a similar exceptional case, whereby the spatial configuration of coastal state jurisdiction can be preserved even when the baseline is subject to ambulation: maritime delimitation.

The LOSC, and customary international law, recognize that coastal states possess entitlements up to certain distances from the shore. Nonetheless, due to the geographical proximity of coastal states, there are often scenarios where one state's entitlement overlaps with that of another. In such a situation, to avoid disputes and foster legal certainty, it is

necessary to establish a boundary between the entitlements of both states that clearly demarcates the sovereign rights and jurisdiction possessed by each.[931] This process is called delimitation. The delimitation of maritime boundaries is a task that can be conducted by coastal states on their own, through treaties, or by adjudication.[932] Critically, unlike entitlement limits, maritime boundaries established through delimitation are considered permanent, and do not ambulate with sea-level rise.[933]

In the Bay of Bengal case, the tribunal stated that coastal change was only relevant to determine the configuration of the baseline at the time delimitation occurred, whereas all subsequent changes to the coastline due to sea-level rise would have no effect on the delimited boundary.[934] In the Chamizal Arbitration, the tribunal noted that delimitation 'seem[ed] to be more consistent with the idea of a fixed boundary than one which would vary by reason of alluvial processes', noting that only explicit language in a treaty text could be used to displace the presumption of a 'fixed and invariable boundary'.[935] In the Aegean Sea Continental Shelf case, the ICJ observed 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'.[936] This fixed and permanent character of delimited boundaries has been reiterated in several other cases.[937]

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[931] Lagoni & Vignes (eds), *Maritime Delimitation* (2006) vii; Fietta & Cleverly (n 352) 3; Elferink et al, 'The Judiciary and the Law of Maritime Delimitation' in Elferink et al, *Maritime Boundary Delimitation* (2018) 1; Tanaka, *Predictability and Flexibility in the Law of Maritime Delimitation* (2nd edn, 2019) 2; Lando, *Maritime Delimitation as a Judicial Process* (2019) 22.

[932] Ibid.

[933] Unless, of course, ambulation is explicitly stipulated for in the delimitation treaty or judgment: Purcell (n 104) 145. Such express stipulations can be observed in the following: Nicaragua v. Colombia (2012) 756; Article 2(5) Micronesia-Marshall Islands Delimitation Agreement; Article 1 Romania-Ukraine State Border Agreement.

[934] Bay of Bengal Arbitration 62-63.

[935] Chamizal Arbitration 321.

[936] Aegean Sea Continental Shelf 35-6;

[937] Grisbådarna 6; Beagle Channel 88-89; Temple of Preah Vihear 34; Rann of Kutch case 149-150; Dubai/Sharjah 578; Burkina Faso/Mali 565; Libya/Chad 37; Guinea-Bissau v. Senegal 36-7.

That delimited boundaries are not subject to ambulation is also indicated by state-practice. The ILC's Study Group on Sea-level rise, after examining statements on the consequences of sea-level rise for delimited boundaries before the Sixth Committee of the UN, concluded 'all statements tackling the issue of maritime delimitations have advocated for maintaining them as such, while no statement was made in favour of their modification because of sea-level rise'.[938] Indeed, there appears to be no instance of a state seeking to challenge the locus of a delimited boundary on the ground that sea-level rise has caused the original baseline to shift.[939] Similarly, the non-ambulatory character of delimited boundaries finds wide support in scholarship, even from those who contest the permanence of such boundaries in the context of sea-level rise.[940] Finally, the fixity of maritime boundaries is also prescribed by the general principle of stability of boundaries.[941]

Therefore, one might appropriately conclude that delimitation is a useful tool that can be employed by threatened coastal states to mitigate the effects of sea-level rise. By permanently fixing their boundaries, coastal states can ensure predictability in their jurisdiction over maritime areas and preserve access to vital fisheries and other economic resources. Indeed, this is the position that will be advanced by the Chapter. Nonetheless, there are important critiques that are levelled against the permanence of delimited boundaries in the context of sea-level rise. The Chapter will first provide a brief survey of scholarship on this issue, explaining the manner in which it has been dealt with in academic writing, picking out the grounds on which scholars argue that delimited boundaries are susceptible to challenge [**I**]. It will then consider the primary argument in this context, that of termination of the treaty establishing the

[938] Aurescu & Oral (n 21) 49.

[939] ILA (n 18) 22.

[940] See: Soons (n 19); Schofield (n 84); Lisztwan (n 133); Busch (n 133); ILA (n 18); Purcell (n 120) 145; Aurescu & Oral (n 21); Árnadóttir (n 133) 221.

[941] For a detailed explanation of the principle and its consequences, see Section III below.

boundary on the grounds of a fundamental change of circumstances [**II**]. Arguing that termination of a boundary treaty does not impact delimited boundaries, the Chapter will proceed to examine a less frequently employed argument, namely that the pacta tertiis rule could invalidate delimited boundaries when they impact third-party rights [**III**]. It will be shown that this argument misunderstands the source of the obligation for third states to respect delimited boundaries. Finally, the Chapter will study the separate rules that govern the stability of boundaries delimited by adjudication, considering whether their fixity is qualitatively distinct from that of boundaries established by treaty [**IV**]. Through this analysis, the Chapter will demonstrate that delimited boundaries are resilient to the effects of sea-level rise.

## I. Appraising the Literature

When faced with fluctuating entitlement limits, an intuitive response might well be to fix the ambulating limits in place. Tethered in this fashion, jurisdiction at sea can be resolved into a permanent and predictable spatial division of entitlements with no further risk of oscillating maritime zones. Indeed, as discussed in Chapter 1, there appears to be an overwhelming desire in the scholarship to reconfigure the law of the sea to render permanent and unchangeable the division of the oceans into maritime entitlements by coastal states. Not surprisingly, therefore, significant attention has also been given to the only method currently available within the law of the sea to attain a similar fixed division of entitlements: maritime delimitation.

Nonetheless, the manner in which delimitation has been studied leaves much to be desired. A distinct tendency to assert rather than explicate the permanence of delimited boundaries, guided by the imperative to find a workable solution to the issue of retreating baselines, can be gleaned from the writing of those who have studied this issue. Schofield, for instance, suggests:

> Indeed, the recognized stability of boundary agreements (including ones related to maritime boundaries) points to one potential, if only partial, solution. Once maritime boundaries are established they will

> generally not move, even if the basepoints from which the boundary line is constructed become submerged and disappear. It would therefore seem to be a logical step for States whose baselines are threatened by sea level rise to delimit and thereby fix their maritime boundaries as a matter of urgency.[942]

The fixity of maritime boundaries is emphasised to justify the use of delimitation as a solution, but no reasons are offered to explain why maritime boundaries are to be designated with the same degree of permanence and stability that territorial boundaries are charged with. Admittedly, Schofield does appreciate that delimitation carries some restrictions as a tool to counter coastal retreat: he notes that only those limits which overlap with the entitlement of another coastal state can be subject to this process.[943] This is, of course, an important constraint that prevents the use of delimitation in circumstances where the coastal state can claim the full permitted breadth of an entitlement. However, other equally pressing constraints are ignored. In particular, no mention is made of the potential impact that delimited boundaries might have on the rights of third states where significant coastal retreat eliminates the overlap in entitlements of the states that carried out the delimitation. The opposability of delimited boundaries in such scenarios is presumed rather than justified.

Likewise, Soons notes that:

> In cases where the delimitation agreement explicitly refers to the median line the boundary may shift as a result of sea level rise: asymmetrical changes of the baselines of both States will lead to changes in the location of the median line. The States concerned have deliberately opted for a (potentially) fluctuating boundary line.
>
> In all other cases, where the boundary line has been fixed, it must in principle be concluded that changes in the geographical configuration as a result of sea level rise will not result in changes in the boundary line.[944]

Soons echoes the position that sea-level rise cannot affect delimited boundaries. He does concede that the stability of delimited boundaries may be challenged when faced with sea-level

[942] Schofield (n 84) 225.

[943] Ibid.

[944] Soons (n 19) 227.

rise, but only considers this possibility through the lens of a 'fundamental change of circumstances'.[945] Ultimately, however, he dismisses this concern by observing that 'treaties establishing a boundary (which must be deemed to include maritime delimitation agreements) have explicitly been excluded from this possibility to invoke a fundamental change of circumstances'.[946] Soons does not explain why maritime delimitation treaties fall within this exception, though this is understandable. The argument that Article 62(2)(a) VCLT may be restricted to territorial boundaries gained traction in subsequent scholarship, much after Soons wrote this piece.

Numerous authorities take this approach of perceiving the rule of 'fundamental change of circumstances' to be the only ground on which delimited boundaries may be challenged due to sea-level rise, and dismissing it by presuming that maritime delimitation treaties fall within the boundary-treaty exception carved out to this rule. Freestone and Pethick, while contemplating the impact of sea-level rise on delimited boundaries, note that '[m]aritime boundary agreements, once made, belong to that class of treaty the validity of which is not affected by 'subsequent fundamental change of circumstances' under the Vienna Convention on the Law of Treaties'.[947] Implicit in this sentence is the belief that termination on the grounds of a fundamental change of circumstances is the only ground available to question the stability of boundaries delimited by treaty. Busch makes the same claim, concluding that '[s]tates that have not entered into delimitation agreements with neighboring States or established their boundaries in accordance with international adjudication, are more vulnerable to the effects of sea level rise'.[948] Yet, no attempt is made to engage with arguments that such boundaries might

[945] Ibid 228.

[946] Ibid.

[947] Freestone & Pethick (n 19) 77. In subsequent writing, Freestone acknowledges that the application of the boundary-treaty exception to maritime boundaries is contested but does not offer analysis to support such application: Freestone & Çiçek, *Legal Dimensions of Sea Level Rise* (2021) 41.

[948] Busch (n 133) 179.

be vulnerable to challenge on the grounds of a fundamental change of circumstances or the 'pacta tertiis' rule.

This oversight can also be noticed in the work of the ILA's Sea Level Rise Committee's. The Committee concluded in its Sydney Conference Report that 'it did not need to come to a determination as to whether it considered Article 62(2) of the 1969 Vienna Convention to apply to maritime boundaries'.[949] Instead, the Committee opted to make the following recommendation:

> The Committee proposed that, on the grounds of legal certainty and stability, the impacts of sea level rise on maritime boundaries, whether contemplated or not by the parties at the time of the negotiation of the maritime boundary, should not be regarded as a fundamental change of circumstances.[950]

While this is a normatively desirable outcome, the Committee seemed to disregard the crucial difference between the law, as it is, and as it ought to be. Asserting that sea-level rise should not constitute a fundamental change of circumstances does not imply that it is not such a change. As such, the Committee's desire that certainty and stability ought to be respected holds little weight for coastal states in the position to gain vast swathes of the ocean by using Article 62 VCLT. This was underscored by the ILC's Study Group on Sea-level Rise:

> Despite the fact that, in its final report to the Sydney Conference, the Committee considered that "the interests of the international community would at this stage not be best served by a proposal undermining existing negotiated and established maritime boundaries", the Committee "took the view that it did not need to come to a determination as to whether it considered Article 62(2) of the 1969 Vienna Convention to apply to maritime boundaries". But this question needs a clear answer.[951]

However, the Study Group's own examination of this issue is also incomplete. Relying on a few sentences in judicial decisions that reference stability in the context of maritime boundaries, it claims 'international jurisprudence is clear' that such boundaries are invulnerable

[949] ILA (n 18) 24.

[950] Ibid 25.

[951] Aurescu & Oral (n 21) 45.

to challenge in the context of sea-level rise.[952] It relies on normative declarations by states concerning the stability of boundaries, taken out of context, to argue that 'State practice generally supports the preservation of existing maritime delimitations'.[953] Each of these arguments is considered below. For now, however, it is sufficient to note that the stability of delimited boundaries in the context of sea-level rise is assumed rather than explained by existing scholarship. As Purcell aptly notes, '[w]hat is lacking is a clear understanding of when, why, and how geographical change may be legally significant for boundaries between States'.[954]

Even those who conclude that delimited boundaries are vulnerable to the threat of termination offer similar incomplete analysis. Their focus is solely directed at the fundamental change of circumstances rule and, within that, their analysis on the boundary-treaty exception is brief. Caron observes:

> …that during the possibly great strains accompanying climate change, states might question the fairness of past delimitation agreements with neighbouring states. Even though states generally have a great interest in upholding the sanctity of such agreements, it is entirely plausible that a state might argue that circumstances had changed in that the parties had not foreseen such a rise in sea level.[955]

Caron considers the termination of delimited boundaries an 'entirely plausible' outcome but does not address why maritime delimitation falls outside the boundary-treaty exemption. Rothwell and Stephens question the 'affirmation of stability in the context of maritime boundaries' when faced with sea-level rise,[956] but do not explain precisely how this affirmation may be challenged in law. Similarly, Lusthaus speculates that '[c]onflicts could occur as states

[952] Ibid 54.

[953] Ibid.

[954] Purcell (n 120) 104. Purcell, however, does not study this issue independently since the central claim of her monograph is that the baseline is not subject to ambulation due to sea-level rise. Therefore, to her, sea-level rise cannot possibly pose a threat to the stability of delimited boundaries. The first element of this claim has already been addressed above, in Chapter 2. This Chapter will respond to the second part of the claim.

[955] Caron (n 86) 641.

[956] Rothwell & Stephens (n 138) 413.

directly and forcefully challenge other states' sovereignty over maritime territory, possibly even calling past delimitation agreements into question' when faced with retreating baselines.[957] The manner in which such legal challenges could occur is not detailed, other than a footnote which observes that such termination 'would probably breach article 62(2)(a) of the Vienna Convention on the Law of Treaties, which does not allow an unforeseen fundamental change in circumstances to be invoked to withdraw from or terminate a boundary treaty'.[958] Kaye, on the other hand, does offer analysis on this point in the following manner:

> …there may be some latitude when interpreting Article 62(2)(a). The Convention does not specify whether it applies to all boundaries, including maritime boundaries, or whether the term "boundary" should be read only to include land boundaries. When seeking assistance for interpreting this Article, it is permissible to consider the travaux préparatoires of the Convention. In the discussion of the draft text in 1966, the International Law Commission does not refer to maritime boundaries, noting the example of the Free Zones Case, which involved a terrestrial boundary and discussed the impact of self-determination on terrestrial boundaries. It is also well to note that when the text was finalized in 1966, before its adoption in 1969, there were very few maritime boundary cases, and almost no maritime boundaries in the modern sense had been settled by agreements between States. As such, it is reasonable to conclude that Article 62(2)(a) ought not to apply to maritime boundaries.[959]

Unfortunately, Kaye's analysis on this point does not employ a systematic interpretation of Article 62(2)(a). No attempt is made to look at the ordinary meaning of the term 'boundary' or to read it contextually, in relation to other treaty provisions. Crucially, Kaye entirely neglects subsequent practice on the use of the term 'boundary' that might assist in establishing the shared understanding of this term. Instead, he relies only on the treaty's preparatory work and concludes that the drafters of the treaty were only concerned with territorial boundaries. This reading of the preparatory work will be disputed below.

There are, of course, some exceptions to this sparse analysis. Lisztwan offers a systematic defence for including maritime boundaries within the boundary-treaty exception to Article

[957] Lusthaus (n 160) 114.

[958] Ibid 118.

[959] Kaye, 'The LOSC and Sea Level Rise after the South China Sea Arbitration' 93 International Law Studies (2017) 423, 438-9.

62.[960] She demonstrates that the burden to meet the requirements for a fundamental change of circumstances are cumbersome, uncovers a strong inclination towards maintaining the stability of maritime boundaries in international jurisprudence and employs a meticulous examination of the preparatory work of the VCLT to conclude that 'regardless of whether baselines are ambulatory or fixed, the international maritime boundary regime is largely secure'.[961] Equally detailed is Árnadóttir's response to Lisztwan, contending that only the territorial sea boundary is protected by the exception in Article 62(2)(a), while the boundaries of the continental shelf and EEZ remain vulnerable to the threat of termination.[962] To construct this argument, she re-examines the preparatory work and jurisprudence relied on by Lisztwan and demonstrates how states could potentially meet the requirements to demonstrate a fundamental change of circumstances caused by retreating baselines. Lisztwan and Árnadóttir provide the most comprehensive and methodical arguments on the resilience of delimited maritime boundaries in the context of sea-level rise and, consequently, much of this Chapter is dedicated to scrutinizing and responding to their writing. Nonetheless, their work does share some common approaches.

First, both Lisztwan and Árnadóttir prioritise Article 62 and the fundamental change of circumstances rule as the primary threat to the stability of delimited boundaries. They debate whether or not this provision is applicable to maritime delimitation treaties to assess their stability in the context of sea-level rise. Neither seeks to respond to the preliminary question whether international maritime boundaries constitute executed treaty provisions. This is crucial to consider because, if they do, termination of the delimitation treaty that birthed them does not impact their continued existence. Indeed, as will be shown below in Section II, there is clear

[960] Lisztwan (n 133) 154.

[961] Ibid 157.

[962] Árnadóttir (n 133) 169.

evidence to suggest that this is the case. As a result, the entire debate on the applicability of Article 62 VCLT to maritime boundaries is moot, because even if sea-level rise and the accompanying retreat of baselines constitute a fundamental change of circumstances, they do not affect the stability of the delimited boundary but only the viability of the treaty that established this boundary.

Closely connected to this is the second oversight: neither seeks to understand precisely how international boundaries acquire their opposability to third states. This is relevant because both presume that the pacta tertiis rule constitutes a threat to the stability of boundaries. They acknowledge that, in scenarios where sea-level rise produces third-party rights in the area that was subject to delimitation, the boundary so established will no longer be opposable to such parties because the treaty is res inter alios acta. Inherent in this is the presumption that the opposability of such boundary arises through the treaty that established it. This presumption will be questioned in Section III below.

Finally, neither Lisztwan nor Árnadóttir offer separate analysis on the stability of boundaries delimited through judicial decisions rather than by treaty. Árnadóttir simply notes that:

> …agreed or adjudicated boundaries are permanently fixed through legal processes, and safeguarded by the principles pacta sunt servanda and res judicata. Indeed, LOSC article 296(1) confirms that any decision rendered by a court or tribunal under the compulsory dispute settlement regime shall be final and complied with by all the parties to the dispute.[963]

Similarly, Lisztwan claims that '[b]oundaries established by an ICJ judgment or by a decision of an arbitral body under UNCLOS are certainly binding, final, and not appealable' with no further examination of this issue.[964] This is, in fact, an oversight generally repeated in the scholarship on the stability of maritime boundaries threatened by sea-level rise. Soons

[963] Árnadóttir, 'Effects of Sea Level Rise on Agreements and Judgments' in Heidar (n 148) 382-3.

[964] Lisztwan (n 133) 179-180.

dismisses concerns about boundaries delimited by judicial decisions, noting that the 'legal situation here is in essence the same as in the situation of boundaries established by agreement',[965] which he considers inviolable. The ILA's Sea Level Rise Committee recommends that the 'same approach should also be taken in cases of maritime boundaries established by judgments of international courts or by arbitral awards' as that employed for boundaries delimited by treaty.[966] An absence of separate, detailed analysis on the finality of boundaries delimited through judicial decisions can also be witnessed in the writing of Freestone and Pethick,[967] Schofield,[968] Busch,[969] Caron,[970] and Lusthaus.[971] Yet the rules governing the finality of judgments are distinct from those concerning the termination of treaties, warranting separate analysis. They will be discussed in Section IV.

Through this brief survey of scholarship on the stability of maritime boundaries threatened by sea-level rise, certain gaps can be highlighted. While the general tendency is to profess the permanence of delimited boundaries, this argument is made without systematic analysis of the basis for such permanence and the routes through which it could be challenged. The possibility that such boundaries are executed treaty provisions that exist independent of the treaty that birthed them and are unaffected by treaty termination is seldom considered. Instead, most scholarship leaps to the termination of delimitation treaties on the grounds of a 'fundamental change of circumstances', without first justifying whether such termination can even affect the delimited boundary. Moreover, within the issue of a 'fundamental change of

[965] Soons (n 19) 229.

[966] ILA (n 18) 25.

[967] Freestone and Pethick (n 19).

[968] Schofield (n 84).

[969] Busch (n 133).

[970] Caron (n 86).

[971] Lusthaus (n 160).

circumstances', the meaning of the boundary-treaty exception to this rule is debated without the application of critical tools of treaty interpretation. Further, that boundaries could lose their opposability in circumstances where sea-level rise causes them to impact newly generated third-party rights is rarely considered. Where this possibility is considered, however, no attempts are made to understand how international maritime boundaries acquire opposability to third parties and, conversely, how they might be deprived of such opposability. Finally, that boundaries delimited through judicial decisions are subject to distinct rules concerning their finality and opposability is never directly acknowledged. These are the questions that the following sections of this Chapter will address.

## II. Termination of Boundary Treaties Due to a Fundamental Change of Circumstances

There is an incongruity to the manner in which the stability of delimited boundaries is studied in the context of sea-level rise. The primary ground to question such stability is perceived to be termination on the grounds of a fundamental change of circumstances. Consequently, much of the writing on this issue is dedicated to debating the applicability of the rule contained in Article 62(2)(a), the boundary-treaty exception, to maritime boundaries. Árnadóttir observes that 'fundamental changes to coastal geography may justify termination of settled maritime boundaries, despite the objection of one or more parties to the dispute'.[972] Lizstwan counters that '[e]ven if maritime boundaries did not fall within the Article 62(2) exception, it is still unlikely that coastline shift would constitute sufficient grounds for termination under the doctrine of rebus sic stantibus'.[973] The ILA's Sea Level Rise Committee insists that sea-level rise should not constitute a fundamental change of circumstances because of the potential it carried for 'undermining existing negotiated and established maritime boundaries'.[974] The

[972] Árnadóttir (n 963) 401.

[973] Lisztwan (n 133) 189.

[974] ILA (n 18) 25.

ILC's Study Group contests the use of Article 62 in the context of sea-level rise since this 'would create legal uncertainty, insecurity, and would lead to disputes prompted by the frequent renegotiation of the maritime boundaries', noting that there is a clear trend in jurisprudence favouring the application of the exception under Article 62(2)(a) to maritime boundaries.[975] In similar fashion, Caron,[976] Schofield,[977] Soons,[978] Freestone and Pethick,[979] Kaye,[980] and Busch[981] all consider termination on the grounds of a fundamental change of circumstances to constitute a threat to the stability of delimited maritime boundaries in the context of sea-level rise. They spend paragraphs debating the meaning of the word 'boundary' and whether it encompasses maritime delimitation. Yet, none pause to consider the relevance of this debate. Not one spells out precisely how termination of a delimitation treaty results in the nullity of the boundary established by the treaty. They all assume that a successful challenge to the delimitation treaty is equivalent to a successful challenge of the boundary. This proposition is understandable since it does carry an intuitive appeal. Unfortunately, it appears to be incorrect. This section will demonstrate that the delimitation of boundaries falls within the category of executed treaty provisions that are exempt from the effects of termination [**A**]. It will then demonstrate that this protection is not restricted to territorial boundaries but also encompasses all maritime boundaries [**B**]. The central argument of this section is that there is no need to consider the boundary-treaty exception in Article 62(2)(a) VCLT to justify the resilience of delimited maritime boundaries, since the latter constitute executed treaty provisions. Nonetheless, this exception will also be discussed briefly to justify why, in addition to the

[975] Aurescu & Oral (n 21) 54.

[976] Caron (n 86).

[977] Schofield (n 84).

[978] Soons (n 19).

[979] Freestone and Pethick (n 19).

[980] Kaye (n 959).

[981] Busch (n 133).

delimited boundary, continuing or executory obligations in delimitation treaties, such as those on dispute resolution, joint development zones or pollution control, are also immune to termination on the grounds of a fundamental change of circumstances.

### A. Boundaries as Executed Treaty Provisions

Article 70 VCLT stipulates that, although the termination of a treaty releases the parties from any pending obligations that are to be performed, it 'does not affect any right, obligation or legal situation of the parties created through the execution of the treaty prior to its termination'. Article 62 VCLT, which addresses termination on the grounds of a fundamental change of circumstances, also acknowledges that it only applies to those obligations 'still to be performed under the treaty'. Both provisions have been recognised to be a part of customary international law.[982] As Fitzmaurice notes in his Second Report:

> The principle embodied in these paragraphs, based on the accepted and inherent distinction between "executory" and "executed" clauses, is common form in private law. It is no less so in international law. Yet the point surprisingly often gives rise to misunderstanding. In particular, the idea that the termination of a treaty may somehow revive an antecedent state of affairs is quite often entertained, although, as the Harvard Research volume points out, it is really inherent in the very fact of termination that this cannot be so…[983]

He proceeds to outline 'familiar examples' of such executed clauses, noting that they include 'boundary agreements or delimitations'.[984] The position that boundary delimitations constitute executed treaty provisions finds overwhelming support in academia. Marston observes that:

> Once a boundary line has been established by treaty, whether or not it has been demarcated, its existence as a legal construction binding on the parties is no longer dependant on the continued existence of the

[982] Fisheries Jurisdiction 18; Gabcikovo Nagymaros 38; Rainbow Warrior 251; Nollkaemper, 'Some Observations on the Consequences of the Termination of Treaties' in Dekker & Post (eds), *On the Foundations and Sources of International Law* (2003) 187; Villiger, *Commentary on the 1969 VCLT* (2008) 780, 875; Binder, 'Stability and Change in Times of Fragmentation' 25 LJIL (2012) 909, 912-914; Lekkas & Tzanakopoulos, 'Pacta sunt servanda versus flexibility in the suspension and termination of treaties' in Tams et al (eds), *Research Handbook on the Law of Treaties* (2014) 315, 317-320; Fitzmaurice, 'Exceptional Circumstances and Treaty Commitments' in Hollis (n 35) 602; Helfer, 'Terminating Treaties' in Hollis (n 35) 630.

[983] Fitzmaurice, 'Second Report on the Law of Treaties' A/CN.4/107 (1957) 67.

[984] Ibid.

> treaty or treaty provision which established it. This is a consequence of the doctrine of executed treaty provisions.[985]

Similarly, Haraszti reasons:

> It is assumed that a treaty is terminated with the execution of its provisions. It will hold at most in so far as it establishes the title of the parties to the prestations received in conformity with the provisions of the treaty. When this thesis is applied to boundary treaties, then with the execution of the territorial rearrangements they will lapse, and "continue their life" only in so far as they guarantee a legal title to the State exercising sovereignty over the territory in question in conformity with the treaty. Since any obligation of performance by the parties has ceased, there can be no question of a repeated termination of a treaty once executed and therefore lapsed on the plea of a change of circumstances.[986]

Shaw, while considering the delimitation of boundaries, notes that 'such a regime once created by the treaty will take on an existence separate and distinct from it, which is thus capable of continuing irrespective of the treaty, even if the treaty in question itself ceases to apply'.[987] The ILA, through its fifty-third conference resolution in Buenos Aires, concludes that '[w]hen a treaty which provides for the delimitation of a national boundary between two States has been executed in the sense that the boundary has been delimited and no further action needs to be taken, the treaty has spent its force'.[988] Kaikobad states that 'a boundary treaty, once agreed to, is exhausted', believing that its only remaining purpose after such execution is to serve as 'evidence of the transfer and attribution of territory to the States concerned'.[989] The ILC, in its commentary to the Draft Articles on Succession of States, cites the following statement from the United Nations' Materials on Succession of States: 'any executed clauses such as those providing for the establishment of an international boundary…could not be

[985] Marston, 'The Stability of Land and Sea Boundary Delimitations' in Blake (n 19) 144, 145.

[986] Haraszti, 'Treaties and the Fundamental Change of Circumstances' 146 RCADI (1975) 66.

[987] Shaw, 'Boundary Treaties and their Interpretation' in Rieter & da Waele (eds), *Evolving Principles of International Law* (2011) 239.

[988] ILA, Interim Report on the Succession of States to Treaties (1968) 1-3.

[989] Kaikobad, 'Some Observations on the Doctrine of Continuity and Finality of Boundaries' 54 BYIL (1983) 119, 130.

affected, whatever the position about the Treaty itself might be'.[990] The Commission reiterates that there is a distinction 'between the treaty provisions as such and the boundary resulting from their execution—a distinction made by a number of jurists'.[991] Giegerich notes, while discussing the boundary treaty exception under Article 62, that in the drafting of this provision several members of the ILC believed this provision was unnecessary because delimitation treaties were already fully executed with no remaining obligations to be performed.[992] Villiger cites similar criticism for the boundary-treaty exception under Article 62, stating that 'once a treaty has established a boundary, the result is no longer dependent on the treaty, and the notion of a fundamental change of circumstances no longer has a role to play'.[993] Similar positions are adopted by several others.[994]

That boundary delimitation falls within the ambit of executed treaty provisions is also well-recognised in international jurisprudence. In the Case Concerning the Territorial Dispute, the ICJ was called upon to interpret the effects of a treaty concluded between Libya and Chad in 1955. Article 3 of this treaty established an international boundary between these two states. However, Article 11 noted that the treaty could be terminated by either party after a period of twenty years. Consequently, the Court had to determine whether such termination would impact the continuity of the boundary so delimited. It ruled that:

> The establishment of this boundary is a fact which, from the outset, has had a legal life of its own, independently of the fate of the 1955 Treaty. Once agreed, the boundary stands, for any other approach would vitiate the fundamental principle of the stability of boundaries, the importance of which has been repeatedly emphasized by the Court…A boundary established by treaty thus achieves a permanence

[990] ILC, Draft Articles on Succession of States in Respect of Treaties with Commentaries, Vol.II ILC Yearbook (1974) 200 [emphasis removed].

[991] Ibid.

[992] Giegerich, 'Article 62' in Dörr & Schmalenbach (n 60) 1143, 1166.

[993] Villiger (n 982) 775.

[994] See, for instance: Vamvoukos, *Termination of Treaties in International Law* (1985) 117; Lalonde, *Determining Boundaries in a Conflicted World* (2002) 148; Alvarez-Jimenez, 'Boundary Agreements in the ICJ's Case Law' 23(2) EJIL (2012) 495, 511; Proelss, 'Article 34' in Dörr & Schmalenbach (n 60) 655, 682; Wittich, 'Article 70' in Dörr & Schmalenbach (n 60) 1283, 1292; von Heinegg, 'Fundamental Change of Circumstances' in MPEPIL (2021) ¶31.

> which the treaty itself does not necessarily enjoy. The treaty can cease to be in force without in any way affecting the continuance of the boundary. In this instance the Parties have not exercised their option to terminate the Treaty, but whether or not the option be exercised, the boundary remains. This is not to say that two States may not by mutual agreement vary the border between them; such a result can of course be achieved by mutual consent, but when a boundary has been the subject of agreement, the continued existence of that boundary is not dependent upon the continuing life of the treaty under which the boundary is agreed.[995]

Similarly, in the Territorial and Maritime Dispute, Nicaragua argued that the 1928 Treaty it had concluded with Colombia, which included provisions on boundary delimitation, was terminated due to material breach. The Court noted, however, that the issue of termination was irrelevant by quoting the decision in Libya v. Chad: '[t]he Court recalls that it is a principle of international law that a territorial régime established by treaty "achieves a permanence which the treaty itself does not necessarily enjoy" and the continued existence of that régime is not dependent upon the continuing life of the treaty under which the régime is agreed'.[996] This statement was repeated by the Court in the Dispute Regarding Navigational and Related Rights.[997] There appears to be little doubt that boundaries delimited by a treaty remain unaffected by the termination of such treaty.

This point also finds support in state practice, employed to demonstrate that the shared understanding of the phrase 'legal situation of the parties created through the execution of the treaty prior to its termination' in Article 70 VCLT encompasses boundary delimitation. That states have consistently refrained from terminating delimitation treaties is indicative that they do not consider this a legitimate route for invalidating established boundaries. As the ILC notes, in its Commentary to the Draft Conclusions on Subsequent Agreements and Subsequent Practice, negative conduct and omissions also constitute examples of state practice.[998] In the context of maritime delimitation, the ILA Committee on Sea Level Rise found that it was

[995] Libya/Chad 37.

[996] Nicaragua v. Colombia (2007) 861.

[997] Dispute Regarding Navigational and Related Rights 243.

[998] ILC (n 52) 31.

'unable to trace any situations where a party to a maritime boundary treaty had sought to set it aside for any reason'.[999] The setting aside of territorial delimitation agreements is similarly rare.[1000] Admittedly, however, this absence of practice might also simply be a product of the boundary-treaty exception to the fundamental change of circumstances rule. It does not exclude the possibility that the termination of a boundary treaty, if permitted, could be fatal to the boundary so established. It is therefore useful to also consider instances of how states have responded when one of the parties to a delimitation agreement has sought to set it aside. When Iran attempted to renounce the Shatt-al-Arab boundary by employing the fundamental change of circumstances rule, the Permanent Representative of Iraq submitted a letter to the President of the Security Council, which noted the following:

> The rules of international law generally are obligatory with regard to the respect of treaties, and do not particularly sanction the unilateral abrogation or amendment of boundary treaties under any circumstances. This rule is absolute even if a state of war exists between the two States which are bound by a boundary 'treaty. The coming into effect of a boundary treaty is never extensive in time; it takes place once and for all and the purposes of the treaty are realized upon its coming into force.[1001]

Iraq specified that boundary delimitation fell within the ambit of executed treaty provisions that were not 'extensive in time' but instead were 'realized upon its coming into force'. In Iran's response to this letter, it did not contest this principle of law but simply highlighted violations of the boundary treaty committed by Iraq.[1002] The members of the Security Council echoed Iraq's position, noting that boundaries could not be set aside other than through a consensual process.[1003] Similarly, when Afghanistan sought to terminate the 1921 Treaty of Kabul, which delimited the international boundary between Afghanistan and the British Dominion of India along the Durand line, the United Kingdom responded by observing that

[999] ILA (n 18) 22.

[1000] Vamvoukos (n 994); Lalonde (n 994); Aurescu & Oral (n 21) 54.

[1001] Letter from Iraq to the President of the Security Council (1969) S/9185.

[1002] Letter from Iran to the President of the Security Council (1969) S/9190.

[1003] See: Statement by the President, Security Council Official Records of the 1764th Meeting (1974) S/PV.1764.

'any executed clauses such as those providing for the establishment of an international boundary…could not be affected, whatever the position about the Treaty itself might be'.[1004] A statement to this effect was also made by the USA, Brazil, Argentina and Chile when Peru sought to challenge the 1942 Rio de Janeiro Boundary Protocol it had concluded with Ecuador.[1005] It appears clear, therefore, that the existence of delimited boundaries is not impacted by terminating the treaty that delimited them.

Of course, the preceding discussion might well prompt one to question the purpose of Article 62(2) of the VCLT: if the termination of boundary treaties is incapable of invalidating the boundary delimited therein, why carve out an exception to the rule of a fundamental change of circumstances for such treaties? The stability of delimited boundaries is already preserved by the doctrine of executed treaty provisions. This very question was taken up for discussion by the ILC during its deliberations on the draft article concerning a fundamental change of circumstances. Verdross initiated the discussion of this issue by observing:

> He could support the rule laid down in paragraph 2, which concerned treaties fixing a boundary or effecting a transfer of territory. The rule was not a special rule, but simply the application of a more general rule to the effect that the clausula rebus sic stantibus was not applicable to a treaty which had already been fully executed, for reliance on that clause always presupposed the continued existence of obligations flowing from the treaty. Where a treaty had been fully executed, it ceased to produce any obligation and the clause was inoperative…It might, therefore, be better to state in paragraph 2 the general rule that the clausula rebus sic stantibus was not applicable to a treaty which had been fully executed; examples could be given in the commentary.[1006]

Verdross proposed eliminating the boundary-treaty exception to the provision entirely, and replacing it with a broader exemption for all executed treaty provisions.[1007] Yasseen also noted that:

> The exception concerning boundary treaties or treaties effecting a transfer of territory was merely an application of that general condition for the applicability of a rule. It would therefore be better to work

[1004] ILC Yearbook, Volume II (1974) 200.

[1005] Whiteman, *Digest of International Law Volume 3* (1964) 679.

[1006] ILC Yearbook, Volume I, Part I (1966) 76.

[1007] Ibid.

> out a formula which would cover not only those particular cases but all cases of the same nature. In that respect the Harvard draft might be helpful, for it stated that the treaty "may be declared...to have ceased to be binding, in the sense of calling for further performance ". That language might form the basis of a formula of a general exception derived from the very nature of the principle rebus sic stantibus, and not covering only certain special cases.[1008]

He, too, believed that paragraph 2 would be more effective if it recognised a catch-all exemption for executed treaty provisions. Similarly, de Luna stated that '[h]e agreed with Mr. Verdross's remarks concerning paragraph 2' and de Aréchaga said that he 'supported the proposal by Mr. Verdross to replace the reference to a treaty provision fixing a boundary or affecting a transfer of territory by the more general reference to executed treaties and treaties that contained continuing obligations'.[1009] The Chairman, Bartoš, also noted that '[l]ike Mr. Verdross, he considered that article 44 should not apply to a treaty which had been executed'.

However, Ruda offered the following reasoning for retaining the boundary-treaty exception in spite of the fact that boundaries were protected as executed treaty provisions:

> With regard to paragraph 2, he agreed with Mr. Verdross that it could not apply to a treaty which had already been executed. That was logical and correct in theory, but since the paragraph dealt with frontier problems, a subject on which States were very sensitive, the reference to treaties fixing boundaries should be allowed to stand. States would certainly be favourably impressed by a provision which emphasized still further the exceptional nature of the principle and declared that it was not applicable to the politically very delicate subject of frontiers.[1010]

According to Ruda it was sensible to preserve the exception out of an abundance of caution due to the delicate nature of the subject, and to clarify beyond doubt that boundary treaties were inviolable. Instead, he supported the insertion of the word 'continuing' in relation to the term 'obligation' in paragraph 1 to also make 'it clear that the principle did not apply to obligations already discharged by both parties'.[1011] In response, de Aréchaga also recognised that:

> All too often, a State attempting to revise a frontier settlement did so by attacking the treaty. It was therefore largely for psychological reasons that the provision excluding boundary treaties had been

[1008] Ibid 80.

[1009] Ibid 77, 83.

[1010] Ibid 78.

[1011] Ibid.

> included, so as to reassure States that binding boundary settlements would not be upset by the rule in article 44. However, as he saw it, the exception did not require to be stated in article 44 because, from the legal point of view, the matter was already covered by the provisions of paragraph 1 (b) of article 53, which stated that the lawful termination of a treaty "Shall not affect the legality of any act done in conformity with the provisions of the treaty or that of a situation resulting from the application of the treaty ".[1012]

Ruda and de Aréchaga's remarks were also echoed by Castrén, who insisted that boundary treaties ought to be dealt with explicitly, and in a separate paragraph, to stress 'the importance of the exception'.[1013] Waldock, too, relied on their reasoning to favour the retention of the boundary-treaty exception, noting however that the introduction of the phrase 'continuing obligation' in paragraph 1(b) would address the concern raised by Verdross.[1014] Verdross himself admitted the sensibility of these arguments, declaring that 'he wished to remove the misunderstanding which seemed to have arisen between himself and the Special Rapporteur', and that 'he approved the underlying idea of paragraph 2'.[1015] Consequently, the boundary-treaty exception to the fundamental change of circumstances rule was retained. However, as is apparent from the preceding discussion, this was not because, in the absence of such a provision, boundaries would be vulnerable to the threat of termination. To the contrary, despite the protection offered to delimited boundaries as executed treaty provisions, the drafters thought it necessary to explicitly lay down an additional boundary-treaty exception to Article 62 'for psychological reasons', due to the sensitivity of the subject, and to reinforce 'the importance of the exception'.

Therefore, the presence of a boundary treaty exclusion within Article 62 does not imply that, in the absence of this provision, boundaries could be annulled through the termination of the treaty that established them. As a result, the entire discussion on the applicability of the

[1012] Ibid 83.

[1013] Ibid 76.

[1014] Ibid 86.

[1015] Ibid.

fundamental change of circumstances rule to maritime delimitation treaties is unnecessary. While it is still necessary to consider whether maritime boundaries are to be considered true 'boundaries', this is not to demonstrate that they fall within the exception to Article 62. Instead, it is to address the preliminary question of whether they constitute executed treaty provisions. This question will be addressed in the section below.

### B. Maritime Boundaries as True Boundaries

At this point, one might pause to question the relevance of the preceding discussion. Most of the literature on the termination of maritime delimitation treaties in the context of sea-level rise discusses this issue in relation to the boundary-treaty exception in Article 62 VCLT, arguing whether this exemption is applicable to maritime boundaries. Therefore, even if boundary delimitation falls within the ambit of executed treaty provisions, one might suggest that the content of this debate essentially boils down to the same question that occurs in the context of the exception to the fundamental change of circumstances rule: do maritime boundaries constitute boundaries? It is submitted, however, that this is not the case.

Those who argue for the exclusion of maritime boundaries from the boundary-treaty exception to Article 62 do so not because they consider that maritime delimitation does not produce true boundaries for the purposes of international law. Instead, they do so because they believe that the drafters of the VCLT intended to impart the word 'boundary' in Article 62(2)(a) a special meaning, distinct from the manner in which it is regularly used. As Árnadóttir reasons:

> Purcell submits that the term 'boundary' is used, in the law of the sea context, to refer to a line that separates two States. However, the criteria laid out in Section 5.3.5 suggests that a 'boundary' within the meaning of VCLT article 62, is a line that separates the territory of two States. Therefore, non-territorial maritime boundaries might not be considered 'boundaries' in the formal sense – even if some maritime boundary agreements employ the term. Conversely, maritime boundaries might be 'true boundaries' without qualifying as boundaries in the context of VCLT article 62(2)(a).[1016]

[1016] Árnadóttir (n 133) 209.

Árnadóttir clarifies that her argument concerning the boundary treaty exception is not predicated on establishing that maritime delimitation treaties do not produce 'true boundaries'; instead, her only argument is that Article 62(2)(a) excludes a specific sub-category of boundaries from the ambit of the fundamental change of circumstances rule, i.e. territorial boundaries. She reasons that maritime boundaries (other than the territorial sea boundary) do not fall within this category. Even if this were true, and it will be argued below that it is not, there are no reasons to suggest that this same distinction between territorial and non-territorial boundaries is relevant for the classification of boundary treaties as executed treaty provisions. Indeed, as Marston specifically reiterates after a thorough examination of the differences between territorial and maritime delimitation, '[n]one of the above points of distinction would seem sufficient for excluding lines of maritime delimitation from the effect of the doctrine of executed treaty provisions, a doctrine which applies to a wide variety of legal situations not confined to boundaries'.[1017] It is telling that in Libya v. Chad the ICJ, whilst justifying the independence of a boundary from the treaty that delimited it, cites the Aegean Sea Continental Shelf case.[1018] This case, of course, was concerned with maritime delimitation, and in this context it was noted by the Court 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'.[1019] By citing with approval a decision concerned with maritime delimitation, and one that specifically stresses the equivalence of maritime and territorial delimitation, it seems quite clear that the judgment in Libya v. Chad was intended to include all categories of boundary delimitation within the ambit of executed treaty provisions. Similarly, in Nicaragua v. Colombia, the ICJ emphasized the executed nature

[1017] Marston (n 985) 153.

[1018] Libya/Chad 37.

[1019] Aegean Sea Continental Shelf 35-6.

of boundary-delimitation provisions for a treaty that delimited *both* a land and maritime frontier.[1020] It made no distinction between these two frontiers and considered each to be impervious to the threat of termination due to their status as executed provisions.[1021] For these reasons, it can be concluded that the debate on the boundary-treaty exception to Article 62 and the status of boundaries as executed treaty provisions are *not* the same: there are no plausible reasons to exclude maritime boundaries from the latter category. Therefore, establishing the stability of delimited maritime boundaries becomes a much simpler task when they are viewed through the lens of executed treaty provisions.

Nonetheless, this section will briefly consider the arguments raised to exclude maritime boundaries from the boundary-treaty exception to Article 62 for two reasons. First, if it can be shown conclusively that maritime boundaries do fall within this exclusion, it offers further evidence of their status as executed treaty provisions, bolstering the argument raised in the preceding section.[1022] Second, and far more crucially, it also helps establish that the maritime delimitation treaty itself, and not just the boundary it delimits, is invulnerable to legal challenge in the context of sea-level rise. This is important to consider because such treaties often contain vital obligations of a continuing or executory nature, such as on dispute resolution, joint development zones, management and exploitation of unified resource deposits, pollution control, and marine scientific research[1023] – all of which help ensure predictability in the use of the oceans. Although the priority in the context of sea-level rise is to ensure, first and

[1020] Nicaragua v. Colombia (2007) 867.

[1021] Ibid 861.

[1022] As illustrated above, the drafters of this provision considered boundary treaties covered by Article 62(2)(a) to be a sub-category of executed treaty provisions. Therefore, if it can be shown that maritime boundaries fall within this sub-category, such evidence also proves that they fall within the broader category of executed treaty provisions.

[1023] See, for instance: United States-Mexico Continental Shelf Delimitation Treaty; Trinidad and Tobago-Venezuela Maritime Delimitation Treaty; Mauritius-Seychelles EEZ Delimitation Treaty; Albania-Italy Continental Shelf Delimitation Treaty.

foremost, the protection of delimited boundaries, it is still useful to also establish the resilience of other provisions within delimitation treaties that contribute to stability and certainty in jurisdiction at sea.

It is apt to commence this discussion by considering Árnadóttir's justification for the exclusion of maritime boundaries from the ambit of Article 62(2)(a), since she offers the most comprehensive account of this argument. Her argument essentially employs three prongs. First, she relies on the ILC's Commentary to the 1986 Vienna Convention on the Law of Treaties between States and International Organizations. Article 62 of that treaty contains an identical boundary-treaty exception as that found in Article 62(2)(a) VCLT. Regarding this Commentary, Árnadóttir notes:

> The ILC explained, when codifying the Vienna Convention on the Law of Treaties Between States and International Organizations or Between International Organizations, that the "term 'boundary' customarily denotes the limit of the land territory of a State, but it could conceivably be taken more broadly to designate the various lines which fix the spatial limits of the exercise of different powers". The ILC explained further that lines could be boundaries for certain purposes and not others, e.g., opposable to other States while not conferring exclusive jurisdiction. The Commission noted that territorial sea boundaries were "true limit[s] of the territory of the State" but further explained that even if other maritime boundaries, and boundaries to air space, could also be categorized as "true boundaries", they might not fall within the boundary exclusion of VCLT article 62(2)(a). This suggests, although inconclusively, that territorial sea boundaries are exempt from termination by reference to fundamental changes and that other maritime boundaries, including exclusive economic zone, continental shelf and single purpose boundaries, are not.[1024]

Admitting that her inference is inconclusive, Árnadóttir employs the ILC's Commentary to assert that EEZ and continental shelf boundaries fall outside the ambit of the boundary treaty exception. Unfortunately, she relies on a partial reading of the Commentary, taken out of context. When considered in entirety, it appears quite clear the Commission was not attempting to offer an interpretation of the boundary treaty exception, but was simply raising important questions for consideration whilst debating the meaning of this exception. It points out that even if maritime boundaries are 'true boundaries', 'it is possible' that the protection offered by

[1024] Árnadóttir (n 133) 198.

Article 62(2)(a) does not extend to them, but then immediately follows up this statement with a clarification that it 'is not equipped to interpret' the VCLT or the LOSC through this Commentary, questioning the weight to be attached to its own conclusions.[1025] Moreover, prior to this discussion, the ILC explicitly notes that its commentary was subject to the proviso that '[t]he Vienna Convention has now entered into force and the practice of the States bound by it will govern the meaning of the expression "treaties establishing a boundary"'.[1026] It will be demonstrated below that the practice of states offers clear evidence that maritime delimitation is encompassed by the term 'boundary'. As a result, the ILC's Commentary doesn't offer any material support to the claim that maritime boundaries are excluded from the boundary-treaty exception.

Next, Árnadóttir relies on the preparatory work of the VCLT to substantiate her argument:

> When codifying VCLT article 62, the ILC explained that the phrase, 'treaty establishing a boundary', was broader than 'treaty fixing a boundary'; broad enough to encompass treaties of cession and delimitation. Cession refers to '[t]he transfer of sovereignty over a territory by means of a treaty' and delimitation can be described as 'marking off, or describing the limits or boundary line of a territory or country'. The term clearly covers treaties delimiting land territory because the Commission only referred to such treaties when discussing the types of treaties encompassed by the boundary exception. However, the reference to treaties of cession and delimitation leaves unclear whether the boundary exception extends beyond treaties that establish boundaries on land.[1027]

This is a confusing argument to follow, since it appears to rely on a combination of the preparatory work of the VCLT with what Árnadóttir perceives to be the ordinary meaning of the term 'delimitation'. She employs a stray sentence in the preparatory work which noted that 'treaties establishing a boundary' included within its meaning treaties of cession and delimitation. She then claims that delimitation means 'marking off, or describing the limits or boundary line of a territory or country'. Note that this was not a definition employed by the

[1025] ILC, Draft Articles on the Law of Treaties between States and International Organizations, ILC Yearbook Volume II, Part II (1982) 61.

[1026] Ibid 60.

[1027] Árnadóttir (n 133) 198.

drafters of the provision. Instead, Árnadóttir's source for this definition is a website titled 'The Law Dictionary' which appears to source its content from the second edition of Black's Law Dictionary – a dictionary compiled in 1910.[1028] More, recent editions of Black's Law Dictionary,[1029] and other dictionaries specifically compiled for public international law,[1030] accept the establishment of maritime boundaries within the meaning of 'delimitation'. However, what is more worrying is that Árnadóttir disregards direct statements from the preparatory work that indicate that the term 'boundary' was intended to include maritime boundaries. For instance, Waldock's third report explicitly employs the terms 'boundary' and 'delimitation' in relation to maritime borders and not just those at land:

> Disputes having arisen in the early years of the present century concerning certain lobster and shrimp fisheries, it became necessary to delimit the course of the boundary seaward to the limit of territorial waters. The Tribunal declined to use either the median-line or thalweg principles for delimiting the maritime boundary under the treaty, on the ground that neither of these principles had been recognized in the international law of the seventeenth century.
>
> … The reason why, on the other hand, a change in the general rules of international law from the principle of the perpendicular line, to the line of equidistance would not modify the application of the treaty with respect to the maritime frontier is that the treaty was intended by the parties to constitute a definitive settlement of their boundary — in other words, to have dispositive and final effects on the basis then agreed.[1031]

Further, the report repeatedly employs the phrase 'territory' to reference both land and maritime domains.[1032] Moreover, as Lizstwan argues, statements by the delegates of Ukraine and the United States on island disputes whilst discussing the boundary-treaty exception, 'and the absence of any contrary statements, suggest that the State Parties intended maritime

[1028] Ibid.

[1029] Garner (ed), *Black's Law Dictionary* (9th edn, 2009) 493.

[1030] See, for instance: Grant & Parry, *Encyclopaedic Dictionary of International Law* (3rd edn, 2009) 69.

[1031] Waldock, Third Report on the Law of Treaties A/CN.4/167 (1964) 9, 10.

[1032] Ibid 27-30.

boundaries to fall within the Article 62(2) boundary exception'.[1033] Consequently, the preparatory work of the VCLT does not offer support to Árnadóttir's claims.

The third and final prong of Árnadóttir's argument is her response to the ICJ's decision in the Aegean Sea Continental Shelf case. She reasons:

> The ICJ reached the conclusion that the dispute concerning the delimitation of the continental shelf between Turkey and Greece was excluded from mandatory jurisdiction under the Greek reservation. However, this was not due to the continental shelf being classified as territory or having 'territorial status'. In the words of the Court, '[t]he question is not, as Greece seems to assume, whether continental shelf rights are territorial rights or are comprised within the expression "territorial status". The real question for decision is, whether the dispute is one which relates to the territorial status of Greece.' This differs from the test applicable to VCLT article 62(2)(a) as it only excludes treaties that, in fact, establish (territorial) boundaries, and not those relating to such boundaries or otherwise creating 'territorial status'. The standard to be applied to treaties establishing boundaries under VCLT article 62(2)(a) must be stricter because 'territorial status' has a broader connotation than 'territory' or 'boundary', within the meaning of VCLT article 62(2)(a).[1034]

She attempts to draw a fine distinction between the meaning of 'territory' and disputes relating to 'territorial status', noting that while the delimitation of the continental shelf may fall within the ambit of the latter, it is excluded from the former. This is because Árnadóttir's argument hinges on proving that the boundaries referenced in Article 62(2)(a) are territorial boundaries. Thus, by demonstrating that the delimitation of the continental shelf does not produce a territorial boundary, she seeks to prove that they are excluded from the boundary-treaty exception. However, in the midst of this reasoning, she pays short shrift to a direct statement by the ICJ in the Aegean Sea Continental Shelf case: '[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'.[1035] Árnadóttir's only response to this sentence is to dismiss it as 'obiter dictum'.[1036] Even if the classification

[1033] Lisztwan (n 133) 188-89.

[1034] Árnadóttir (n 133) 201.

[1035] Aegean Sea Continental Shelf 35-6.

[1036] Árnadóttir (n 133) 202.

between ratio decidendi and obiter dictum were one recognised in public international law, which is questionable,[1037] it seems unlikely that the preceding sentence could be considered obiter. This sentence formed a critical part of the Court's reasoning on why the delimitation of the continental shelf was a dispute about 'territorial status', thereby falling within the Greek reservation to the Court's jurisdiction. It was pivotal to the Court's final decision.

Finally, it is crucial to note that Árnadóttir and those who argue for the exclusion of maritime boundaries from the ambit of Article 62(2)(a) do so by overlooking critical aspects of treaty interpretation.[1038] The ordinary meaning of the term 'boundary' encompasses maritime frontiers. This is typically the starting point in any interpretive exercise,[1039] and one that is not directly addressed by Árnadóttir. The ICJ has clearly stated that the term 'boundary' applies to the territorial sea, the continental shelf and the exclusive economic zone.[1040] Parry and Grant define boundaries as '[t]he imaginary lines on the surface of the earth which separate the land territory or maritime zones (**continental shelf** and **EEZ**) of one State from that of another'.[1041] The Oxford Dictionary of Law notes that the term 'boundary' is also used in relation to the 'maritime domain' of a state.[1042] The Australian Law Dictionary notes that it is used to define the 'jurisdictional limits of the state', which certainly encompasses continental shelf and EEZ boundaries.[1043] However, as noted in US-Measures Affecting Gambling,

[1037] See: Gao, 'Dictum on Dicta: Obiter Dicta in WTO Disputes' 17(3) World Trade Review (2018) 509; Sacerdoti, 'A Comment on Gao' 17(3) World Trade Review (2018) 535.

[1038] Article 31(1) VCLT. Note that the VCLT's provisions on treaty interpretation can be employed to interpret the VCLT due to their independent customary status: Gardiner (n 35) 10; Klabbers, 'International Legal Histories' 50 NILR (2003) 267, 270.

[1039] Arbitral Award of 31 July 1989 69; Advisory Opinion on the Competence of the General Assembly for the Admission of a State 8; South West Africa 336; Gardiner (n 35) 185.

[1040] Romania v. Ukraine 85-89.

[1041] Parry & Grant (n 1030) 69 [emphasis in original].

[1042] 'Boundary' in Law (ed), *Oxford Dictionary of Law* (9th edn, 2018).

[1043] 'Boundary' in Mann (ed), *Australian Law Dictionary* (3rd end, 2018).

'…dictionaries, alone, are not necessarily capable of resolving complex questions of interpretation'.[1044]

It is useful, therefore, to also consider the object and purpose of the treaty.[1045] The object and purpose of a treaty includes within its ambit the purpose of particular provisions of the treaty.[1046] The purpose of the boundary-treaty exception within Article 62, according to the ILC, is to serve as an 'instrument of peaceful change' and to 'avoid dangerous frictions'.[1047] Both these considerations are equally true for maritime boundaries. The Preamble to the LOSC acknowledges that the legal order for the seas it establishes is important to 'promote the peaceful uses of the seas and oceans'. As the ITLOS observed, states need to exercise 'caution and prudence to avoid any conflict and to maintain friendly relations with their neighbours' in disputes concerning maritime boundaries.[1048] Indeed, Chapter 1 outlined how an absence of predictable jurisdiction at sea can be a source of international conflict. Therefore, a good faith interpretation of Article 62(2)(a) that accords with the object and purpose of the VCLT ought to include maritime delimitation treaties within it. Reading the boundary-treaty exception in a liberal fashion also renders it more efficacious, as required by the ut res principle,[1049] permitting the exception to secure a greater number of boundaries and ensure stability at both land and sea. Moreover, the term 'boundary' should also be interpreted in accordance with other 'relevant rules of international law applicable in the relations between the parties'.[1050] 106 of

[1044] US-Measures Affecting Gambling 54.

[1045] Article 31(1) VCLT.

[1046] Avena 48; US-Shrimp 42; Gardiner (n 35) 220-221.

[1047] ILC (n 35) 259.

[1048] Ghana/Côte D'Ivoire 74.

[1049] Corfu Channel 24; Free Zones of Upper Savoy 13; Japan-Taxes on Alcoholic Beverages 12; Aegean Sea Continental Shelf 22; Libya/Chad 25.

[1050] Iron Rhine Arbitration 28; Mutual Assistance in Criminal Matters 219; US-Shrimp 48-50; EC-Large Civil Aircraft 362; McLachlan (n 55) 279; Merkouris (n 60) 95.

the VCLT's 116 parties are also parties to the LOSC,[1051] which uses the phrase 'boundary' in relation to the delimitation of the territorial sea, EEZ and continental shelf.[1052] It is important to note that international law does not mandate that all parties to the treaty under interpretation be parties to the treaty from which a relevant rule is employed for interpretive purposes.[1053]

Finally, perhaps the most crucial element of treaty interpretation that is overlooked in the debate on the boundary-treaty exception is the use of subsequent practice.[1054] There is overwhelming evidence of the parties to the VCLT employing the term 'boundary' in maritime delimitation treaties – not just in the context of the territorial sea but also for the EEZ and the Continental Shelf. As parties to the VCLT, these states were cognizant that the term 'boundary' carries special importance when employed in a treaty, exempting the treaty from termination on the grounds of a fundamental change in circumstances due to the rule in Article 62(2)(a). Knowing this, they willingly used the term to describe the product of maritime delimitation. This constitutes subsequent practice in the application of Article 62(2)(a), establishing the agreement of the parties on the interpretation of the term 'boundary'. The consistency and breadth of this practice proves, beyond all doubt, that maritime delimitation treaties generate true boundaries. Algeria,[1055] Argentina,[1056] Australia,[1057] Barbados,[1058] Belgium,[1059] Benin,[1060]

[1051] See: Parties to the VCLT; Parties to the LOSC.

[1052] Article 298(1)(a)(i) LOSC.

[1053] Iron Rhine Arbitration 28; Mutual Assistance in Criminal Matters 219; US-Shrimp 48-50; EC-Large Civil Aircraft 362; Merkouris (n 60) 47. However, for the contrary view, see: EC-Biotech Products 333-335; Vattenfall v. Germany 49; Linderfalk (n 38) 178.

[1054] Article 31(3)(b) VCLT; El Salvador/Honduras 586; Costa Rica v. Nicaragua 242; ILC (n 52) 58; Gardiner (n 35) 256; Linderfalk (n 38) 165; Thirlway (n 38) 1266.

[1055] Tunisia-Algeria Delimitation.

[1056] Argentina-Chile Delimitation.

[1057] Australia-Papua New Guinea Delimitation.

[1058] Guyana-Barbados Delimitation.

[1059] Belgium-France Delimitation.

[1060] Nigeria-Benin Delimitation.

Bosnia and Herzegovina,[1061] Brazil,[1062] Bulgaria,[1063] Cameroon,[1064] Canada,[1065] Chile,[1066] China,[1067] Colombia,[1068] Costa Rica,[1069] Croatia,[1070] Cuba,[1071] Denmark,[1072] Dominican Republic,[1073] Ecuador,[1074] Egypt,[1075] Estonia,[1076] Finland,[1077] Gabon,[1078] Georgia,[1079] Germany,[1080] Greece,[1081] Guyana,[1082] Haiti,[1083] Honduras,[1084] Iran,[1085] Ireland,[1086] Italy,[1087]

[1061] Croatia-Bosnia and Herzegovina Delimitation.

[1062] Brazil-France Delimitation.

[1063] Turkey-Bulgaria Delimitation.

[1064] Cameroon-Nigeria Delimitation.

[1065] Canada-United Kingdom Delimitation.

[1066] Argentina-Chile Delimitation.

[1067] China-Vietnam Delimitation.

[1068] Colombia-Costa Rica Delimitation.

[1069] Ibid.

[1070] Croatia-Bosnia and Herzegovina Delimitation.

[1071] United States-Cuba Delimitation.

[1072] Canada-United Kingdom Delimitation.

[1073] Dominican Republic-Venezuela Delimitation.

[1074] Peru-Ecuador Delimitation.

[1075] Saudi Arabia-Egypt Delimitation.

[1076] Estonia-Latvia Delimitation.

[1077] Finland-USSR Delimitation.

[1078] Gabon- São Tomé and Príncipe Delimitation.

[1079] Turkey-Georgia Delimitation.

[1080] Netherlands-Germany Delimitation.

[1081] Italy-Greece Delimitation.

[1082] Guyana-Barbados Delimitation.

[1083] Colombia-Haiti Delimitation.

[1084] United Kingdom-Honduras Delimitation.

[1085] Oman-Iran Delimitation.

[1086] United Kingdom-Ireland Delimitation.

[1087] Italy-Greece Delimitation.

Jamaica,[1088] Japan,[1089] Kenya,[1090] Kiribati,[1091] Kuwait,[1092] Latvia,[1093] Libya,[1094] Lithuania,[1095] Madagascar,[1096] Malaysia,[1097] Maldives,[1098] Malta,[1099] Mauritius,[1100] Mexico,[1101] Morocco,[1102] Mozambique,[1103] Myanmar,[1104] Nauru,[1105] Netherlands,[1106] New Zealand,[1107] Nigeria,[1108] Oman,[1109] Pakistan,[1110] Panama,[1111] Peru,[1112] Philippines,[1113] Poland,[1114] Portugal,[1115] Republic

[1088] Jamaica-Colombia Delimitation.

[1089] Japan-Korea Delimitation.

[1090] Kenya-Tanzania Delimitation.

[1091] Cook Islands-Kiribati Delimitation.

[1092] Kuwait-Saudi Arabia Delimitation.

[1093] Estonia-Latvia Delimitation.

[1094] Malta-Libya Delimitation.

[1095] Lithuania-Russia Delimitation.

[1096] France-Madagascar Delimitation.

[1097] Indonesia-Malaysia Delimitation.

[1098] India-Maldives Delimitation.

[1099] Malta-Libya Delimitation.

[1100] Mauritius-Seychelles Delimitation.

[1101] United States-Mexico Delimitation.

[1102] Morocco-Mauritania Delimitation.

[1103] Mozambique-Comoros Delimitation.

[1104] Myanmar-India Delimitation.

[1105] Kiribati-Nauru Delimitation.

[1106] Netherlands-Germany Delimitation.

[1107] United States-New Zealand Delimitation.

[1108] Cameroon-Nigeria Delimitation.

[1109] Oman-Pakistan Delimitation.

[1110] Ibid.

[1111] Panama-Colombia Delimitation.

[1112] Peru-Ecuador Delimitation.

[1113] Philippines-Indonesia Delimitation.

[1114] Poland-USSR Delimitation.

[1115] Portugal-Spain Delimitation.

of Korea,[1116] Russia,[1117] Saudi Arabia,[1118] Senegal,[1119] Slovenia,[1120] Solomon Islands,[1121] Spain,[1122] St. Vincent and the Grenadines,[1123] Sweden,[1124] Tanzania,[1125] Trinidad and Tobago,[1126] Tunisia,[1127] United Kingdom,[1128] Uruguay,[1129] and Vietnam[1130] have all done so. While some of these agreements were adopted prior to the VCLT's entry into force, they still constitute acceptable practice in the application of the VCLT since they were all adopted subsequent to the date of its conclusion.[1131]

Therefore, it can be concluded: first, that maritime boundaries are unaffected by the threat of termination in the context of sea-level rise due to their status as executed treaty provisions; and second, that maritime delimitation treaties are also impervious to the threat of termination as they fall within the boundary-treaty exception to the rule on fundamental change of circumstances.

[1116] Japan-Korea Delimitation.

[1117] Turkey-USSR Delimitation.

[1118] Saudi Arabia-Yemen Delimitation.

[1119] Gambia-Senegal Delimitation.

[1120] Slovenia-Croatia Arbitration.

[1121] Papua New Guinea-Solomon Islands Delimitation.

[1122] Portugal-Spain Delimitation.

[1123] Barbados-Saint Vincent and the Grenadines Delimitation.

[1124] Norway-Sweden Delimitation.

[1125] Kenya-Tanzania Delimitation.

[1126] Trinidad and Tobago-Venezuela Delimitation.

[1127] Italy-Tunisia Delimitation.

[1128] United Kingdom-Honduras Delimitation.

[1129] Argentina-Uruguay Delimitation.

[1130] Vietnam-Indonesia Delimitation.

[1131] ILC (n 52) 13; Gardiner (n 35) 261-2.

### III. The Opposability of Boundaries and Pacta Tertiis

The second critique levelled against the stability of delimited boundaries in the context of sea-level rise is based on *pacta tertiis nec nocent nec prosunt*, i.e. the rule that a treaty is only binding on its parties and it cannot create obligations for third states without their consent. This rule is codified by Article 34 of the VCLT and is a part of customary international law.[1132] According to the argument raised by Lizstwan and Árnadóttir, in situations of large-scale coastal retreat, the overlap of entitlements between two or more coastal states that necessitated the delimitation of their shared boundary can be eliminated, creating a region of the high seas or EEZ within the area delimited. In such circumstances, the rights of third states are implicated since they possess greater freedoms in the newly created region than they would have in the delimited zone. They are now entitled to exercise such freedoms within the delimited region, since the pacta tertiis rule prohibits the delimited boundary from creating obligations for third states. Consequently, in such circumstances, the international maritime boundary is deprived of opposability to third states. As Lizstwan reasons:

> Maritime boundaries provide substantial stability to the international maritime regime, regardless of whether baselines are ambulatory or fixed. Nonetheless, in some rare cases, if baselines are ambulatory, geographic change may generate rights for third states…scenario four and five agreements may create new maritime zones with attendant rights for third states. Therefore, ambulatory baselines would implicate the interests of the international community. Such new rights would call into question the continuing enforceability of this subset of boundary agreements.[1133]

Similarly, Árnadóttir argues that:

> …fundamental changes to coastal geography can generate new maritime entitlements and third States may challenge agreed maritime boundaries that infringe their lawful entitlements. In other words, bilateral maritime boundaries are not opposable to third States…boundaries only enjoy a distinct level of protection if, or as long as, they delimit sovereign title that no other State has the competence to

[1132] Certain German Interests in Polish Upper Silesia 29; Chorzów Factory 45; Island of Palmas 842; Territorial Jurisdiction – River Oder 20; Anglo-Iranian Oil 109.

[1133] Lisztwan (n 133) 192.

> delimit. The emergence of new claims to the area could alter this classification and make a boundary treaty subject to the pacta tertiis rule.[1134]

This argument, while intriguing, is incorrect because it misunderstands how boundaries acquire opposability to third states. Both Lizstwan and Árnadóttir accurately point out that boundary treaties do not constitute objective regimes, capable of producing binding erga omnes obligations.[1135] This was noted by the ICJ in the Territorial and Maritime Dispute:

> These States may conclude maritime delimitation treaties on a bilateral basis. Such bilateral treaties, under the principle res inter alios acta, neither confer any rights upon a third State, nor impose any duties on it. Whatever concessions one State party has made to the other shall remain bilateral and bilateral only, and will not affect the entitlements of the third State.[1136]

This point has also been reiterated in several other judgments.[1137] From this, Lizstwan and Árnadóttir incorrectly conclude that international maritime boundaries are not opposable to third states and only have bilateral effect. Therefore, they can be challenged in circumstances where new rights are generated through coastal retreat. Note that this argument is not restricted to circumstances of sea-level rise. The implied effect of their argument is that delimited boundaries are never opposable to third states, and that third states are under no obligation to respect them. The import of such a legal position is troubling, for it implies that third states can essentially disregard coastal state jurisdiction in delimited zones as they please, exploiting their fisheries or petroleum reserves while suffering no legal consequences. This cannot be correct.

The error that both Lizstwan and Árnadóttir make is that they presume if boundaries are not opposable to third states through the delimitation treaty, they are not opposable to third states at all. Scholarship and jurisprudence demonstrate, on the other hand, that such boundaries

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[1134] Árnadóttir (n 133) 203.

[1135] Lisztwan (n 133) 192; Árnadóttir (n 133) 203.

[1136] Nicaragua v. Colombia (Application by Honduras for Permission to Intervene) 444.

[1137] Tunisia/Libya (Application by Malta for Permission to Intervene) 20; Libya/Malta (Application by Italy for Permission to Intervene) 26; Land, Island and Maritime Frontier Dispute (Application by Nicaragua for Permission to Intervene) 133; Cameroon v. Nigeria (Application by Equatorial Guinea for Permission to Intervene) 1031.

are opposable to third states, but not through the delimitation treaty. Instead, they are opposable to third states through their acquiescence to the exclusive jurisdiction of the parties conducting the delimitation, in combination with the general obligation to respect the sovereign rights of third states. As Proelss reasons:

> While it is true that treaties establishing a boundary between two or more States must be considered as generally being valid erga omnes, the legal basis of their objective character cannot be seen in the alleged dispositive character of the treaties concerned, but rather in the principle that a State is by its very existence competent to consolidate its territory within the limits established by public international law. As the duty to respect the territorial integrity of other States is the most important of these limits, neighbouring States are obliged to delimit their territories peacefully. Consequently, any treaty which establishes a boundary between two or more States is valid erga omnes simply because of the absent competence of third States to regulate the subject matter.[1138]

In his Fifth Report on the Law of Treaties, Fitzmaurice notes that 'all States are under a duty to recognize and respect situations of law or of fact established by lawful and valid treaties tending by their nature to have effects erga omnes' unless 'such State has itself a valid and relevant claim— e.g. to territory purported to be transferred by the treaty'.[1139] Similarly, David argues that a delimited boundary is opposable to third states since it 'was determined by the States which were, a priori, the only ones holding any jurisdictional power to that effect'.[1140] Likewise, in his Third Report, Waldock reasons that boundaries delimited by treaty are opposable erga omnes, noting that 'it is the dispositive effect of the treaty - the situation which results from it - rather than the treaty itself which produces these objective effects'.[1141] Thirlway affirms that a delimited boundary is opposable to third states because it 'deals solely with matters entirely within the sphere of action of the two contracting States', but '[i]f a territorial boundary is fixed by agreement between two adjacent States in a region in which a third State has territorial claims, the agreement is clearly non-opposable to that third State'.[1142]

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[1138] Proelss (n 994) 681-682.

[1139] Fitzmaurice, 'Fifth Report on the Law of Treaties' Vol.II ILC Yearbook (1960) 80, 99.

[1140] David, 'Article 34' in Corten & Klein (eds), *The VCLT: A Commentary* (2011) 887, 891.

[1141] Waldock (n 1031) 32.

[1142] Thirlway (n 38) 559.

Romani notes that boundaries are opposable to third states through acquiescence to and recognition of the competence of the coastal states undertaking the delimitation, and not through the delimitation treaty itself.[1143] Vukas reiterates that 'the pacta tertiis principle does not imply that third parties are not bound to recognize the effects created by the treaty for the parties', insisting that a 'treaty concluded in accordance with international law is a reality for third parties as well'.[1144] Haraszti, too, observes in relation to boundary treaties 'that the obligation of respect for the newly created situation follows from the general principles of international law rather than from the provisions of the original treaty, since the treaty once executed guarantees a title only, whereas respect for the territorial rearrangement must be derived from the general obligation concerning respect for the sovereignty and the territorial integrity of the State'.[1145]

This point also finds acceptance in international jurisprudence. In the Eritrea/Yemen arbitration, for instance, the tribunal reasoned:

> Boundary and territorial treaties made between two parties are res inter alios acta vis-à-vis third parties. But this special category of treaties also represents a legal reality which necessarily impinges upon third states, because they have effect erga omnes. If State A has title to territory and passes it to State B, then it is legally without purpose for State C to invoke the principle of res inter alios acta, unless its title is better than that of A (rather than of B). In the absence of such better title, a claim of res inter alios acta is without legal import.[1146]

Similarly, in the Territorial and Maritime Dispute, whilst considering the application by Honduras to intervene, the ICJ noted that once it had carried out the delimitation of a boundary, '[s]o long as there are no third-State claims, the boundary is to run indisputably on the course defined by the Court'.[1147] That international boundaries are opposable erga omnes, in the

[1143] Romani, 'Objective Regime' in MPEPIL (2021) ¶15.

[1144] Vukas, 'Treaties, Third-Party Effect' in MPEPIL (2021) ¶3.

[1145] Haraszti (n 986) 67.

[1146] Eritrea/Yemen 47.

[1147] Nicaragua v. Colombia (Application by Honduras for Permission to Intervene) 442.

absence of third-party claims to the area being delimited, through acquiescence is reiterated by several others.[1148]

The practical import of these conclusions can be understood through the use of an example. If States A and B conclude a delimitation agreement for their EEZ, the boundary delimited therein is certainly opposable to both states by virtue of this treaty. However, State C, which does not hold any claim to the area under delimitation is not obligated to respect this boundary by virtue of the treaty. Instead, the obligation to respect this boundary arises because State C, cognizant of the delimited boundary by virtue of Article 75 LOSC, acquiesces to the exclusive competence of States A and B, and must therefore respect their sovereign rights and jurisdiction in these waters under Article 56 LOSC. It cannot assert that the delimitation treaty is res inter alios acta, and lay claim to the fisheries in these waters. We must now consider the possibility that, due to significant coastal retreat at the shores of States A and B, the boundary delimited by them lies at a distance that is greater than 200nm from both shores. Under such circumstances, can State C claim the boundary is no longer opposable to it by virtue of the pacta tertiis rule and exercise the freedom of the high seas in the region that lies beyond 200nm from each shore? As shown above, the source of the obligation to respect the boundary for State C is not the delimitation treaty concluded by States A and B, and therefore the pacta tertiis rule has little role to play in subsequently releasing State C from this obligation. Instead, State C has, through its own acquiescence, conceded that States A and B alone possess EEZ rights and jurisdiction over the area being delimited. It is this acquiescence that constitutes the source of C's obligation to respect the delimited boundary. The question that must be asked, then, is whether such acquiescence is only intended to accede to A and B's jurisdiction at the time the

[1148] See, for instance: McNair, *The Law of Treaties* (1986) 655; Chinkin, *Third Parties in International Law* (1993) 139; Fitzmaurice, 'Third Parties and the Law of Treaties' 6 Max Planck Yearbook of United Nations Law (2002) 37; Marston (n 985) 149; Shaw (n 987).

delimitation treaty was concluded, or whether it constitutes a permanent concession that A and B shall hold jurisdiction over the delimited zone in perpetuity. Lizstwan frames the question thus:

> When a newly established boundary infringes on the rights of the third state, the third state may contest the boundary. But is a state that initially respects a boundary estopped from later challenging the boundary on the basis of newly created rights?[1149]

The answer to this question is not determined by the pacta tertiis rule, but through a separate principle in international law: the principle of stability of boundaries. It is a general principle of law that boundaries, once delimited, are to acquire 'a compelling degree of continuity and finality'.[1150] This principle finds frequent mention in international jurisprudence. In the Temple of Preah Vihear case, for instance, Thailand sought to contest the location of the international boundary it shared with Cambodia. The original treaty delimited this boundary along a watershed line that, according to Thailand, had deviated from its delineation on the map shared by both parties. Noting that Thailand had acquiesced to this delineation, thereby forsaking any rights it may have held over the area that fell on the Thai side of the true watershed line, the Court observed:

> In general, when two countries establish a frontier between them, one of the primary objects is to achieve stability and finality. This is impossible if the line so established can, at any moment, and on the basis of a continuously available process, be called in question, and its rectification claimed, whenever any inaccuracy by reference to a clause in the parent treaty is discovered. Such a process could continue indefinitely, and finality would never be reached so long as possible errors still remained to be discovered. Such a frontier, so far from being stable, would be completely precarious.[1151]

The Court further clarified that, once a boundary is acquiesced to, '[f]rontier rectifications cannot in law be claimed on the ground that a frontier area has turned out to have an importance not known or suspected when the frontier was established'.[1152] That Thailand did not fully

[1149] Lisztwan (n 133) 197.

[1150] Kaikobad (n 989) 119.

[1151] Temple of Preah Vihear 34.

[1152] Ibid 25.

comprehend the rights it may have been forsaking at the time of acquiescence was not considered sufficient to question the validity of a delimited boundary. This demonstrates that international law does not permit a state to recant on its acquiescence to an international boundary due to subsequently discovered facts, for such a 'continuously available process' to dispute the boundary would undermine the stability and finality that delimitation is intended to create.

Similarly, in the Grisbådarna Case, when Norway and Sweden disputed the location of their maritime boundary line as delimited by the 1661 Boundary Treaty, the Tribunal assigned the disputed region to Sweden, noting that Norway had acquiesced to lobster fishing, lighthouse installations, maritime surveys, and the placement of beacons in this region by Sweden. The Tribunal observed, in relation to this boundary, that 'it is a well established principle of the law of nations that the state of things that actually exists and has existed for a long time should be changed as little as possible'.[1153] In the Beagle Channel case, the Court observed that 'a boundary, across which the jurisdiction of the respective bordering States may not pass, implies definitiveness and permanence'.[1154] In the Rann of Kutch Arbitration, the Tribunal stated that acquiescence to and recognition of an established boundary would act as barriers to subsequent claims in the region delimited by the boundary, emphasising that the 'stability and finality of all borders…is in the common interest of the whole international community'.[1155] In the Dubai/Sharjah Border Case, the Tribunal acknowledged that boundary delimitations 'have not been re-opened subsequently, even if they sometimes did not take into account historical or ethnic realities', concluding that the stability of boundaries was recognised in international law because 'the re-opening of the legal status of the boundaries of a State may give rise to very

[1153] Grisbådarna 6.

[1154] Beagle Channel 88-89.

[1155] Rann of Kutch 149-150.

grave consequences which may endanger the life of the State itself'.[1156] In Burkina Faso/Mali, the ICJ noted that the stability of international boundaries was essential to prevent 'fratricidal struggles provoked by the challenging of frontiers', recognising that this requirement of stability even superseded considerations of self-determination.[1157] Similarly, in Libya/Chad, the Court observed '[o]nce agreed, the boundary stands, for any other approach would vitiate the fundamental principle of the stability of boundaries, the importance of which has been repeatedly emphasized by the Court'.[1158] That this principle applies with equal strength to maritime boundaries has been recognised in the Aegean Sea Continental Shelf case[1159] and Guinea-Bissau v. Senegal.[1160] In the latter case, the Tribunal held:

> The delimitation of the area of spatial validity of the State may relate to the land area, the waters of rivers and lakes, the sea, the subsoil or the atmosphere. In all cases, the purpose of the relevant treaties is the same: to determine in a stable and permanent manner the area of validity in space of the legal norms of the State. From a legal point of view, there is no reason to establish different regimes dependant on which material element is being delimited.[1161]

As Jennings concludes, 'the bias of existing law is towards stability, the status quo, and the present effective possession; the tendency of the International Court is to let sleeping dogs lie'.[1162] Kaikobad argues that the stability of boundaries 'constitutes one of the more fundamental and important precepts in the corpus' of international law.[1163] Lalonde describes it as 'a true "principle," capable of generating new elements and new results in different circumstances'.[1164] Wasum-Rainer and Wasielewski confirm that it is 'an established principle'

[1156] Dubai/Sharjah 578.

[1157] Burkina Faso/Mali 565.

[1158] Libya/Chad 37.

[1159] Aegean Sea Continental Shelf 35-6.

[1160] Guinea-Bissau v. Senegal 36-7.

[1161] Ibid.

[1162] Jennings, *The Acquisition of Territory in International Law* (1963) 70.

[1163] Kaikobad (n 989) 120.

[1164] Lalonde (n 994) 141.

that delimited boundaries are to be left undisturbed.[1165] Chinkin surmises that '[t]he objectives of continuity, certainty, and stability in international relations are deemed especially important with respect to treaties defining boundaries and dispositive treaties'.[1166] Antunes confirms that the stability and continuity of boundaries, once acquiesced to, is a principle that 'has perhaps the highest political profile'.[1167] Mathias notes that in 'in some circumstances, factors such as stability and legal finality operate to foreclose judicial proceedings' to question an established boundary.[1168] This is also echoed by Alvarez-Jimenez.[1169] Purcell confirms that the 'priority given to the stability of boundaries in international law is well established'.[1170]

From this discussion, it can be concluded that acquiescence to an international boundary must be considered a permanent waiver of any rights held in the area under delimitation, whether known or unknown. The delimitation of boundaries is intended to be a permanent act, and this is well known to states. Therefore, when third states acquiesce to an international boundary, they are cognizant that such acquiescence cannot be disavowed in the future. Any other inference would permit delimited boundaries to be subjected to a continuous process of legal challenge and revision, contradicting the fundamental notions of stability and permanence that are meant to govern them. When a state acquiesces to a delimited maritime boundary, it acknowledges that the states undertaking the delimitation are the only states entitled to jurisdiction and sovereign rights within those waters in perpetuity. It cannot subsequently claim the freedom of the high seas in such areas due to coastal retreat for doing so would contradict the principle of stability of boundaries.

[1165] Wasum-Rainer & Wasielewski, 'Status Quo' in MPEPIL (2021) ¶6.

[1166] Chinkin (n 1148) 139.

[1167] Antunes, 'Acquiescence' in MPEPIL (2021) ¶13.

[1168] Mathias, 'The 2007 Judicial Activity of the ICJ' 102 AJIL (2008) 588, 604.

[1169] Alvarez-Jimenez (n 994) 512.

[1170] Purcell (n 120) 152.

## IV. Boundaries Delimited by Adjudication

The previous sections considered the resilience of boundaries delimited by treaties, concluding that they are resilient to the threat of sea-level rise. Although constituting a much smaller proportion of the corpus of international maritime boundaries,[1171] delimitation can also occur through adjudication. It is therefore useful to consider, briefly, the resilience of such boundaries in the context of sea-level rise.

Scholarship tends to presume that the analysis applicable to delimitation treaties can be transplanted, in toto, to delimitation by adjudication. Árnadóttir acknowledges that 'agreed or adjudicated boundaries are permanently fixed through legal processes, and safeguarded by the principles pacta sunt servanda and res judicata', stating that 'LOSC article 296(1) confirms that any decision rendered by a court or tribunal under the compulsory dispute settlement regime shall be final and complied with by all the parties to the dispute'.[1172] Nonetheless, she claims that such decisions are vulnerable to challenge in the context of sea-level rise, because 'decisions can be reviewed if new facts come to light'[1173] and 'decisions of the ICJ have no binding force except between the parties and in respect of that particular case'.[1174] Both these propositions, while correct, do not negate the resilience of boundaries delimited by adjudication, as will be shown below. For now, however, it is crucial to point out that the sentences reproduced here constitute the entirety of Árnadóttir's argument on the resilience of adjudicated boundaries. No further analysis on the normative content of res judicata or the rules for revision of boundaries is offered. She is hardly alone in this regard. Lizstwan supports the

[1171] Adjudicated boundaries constitute less than ten percent of the total maritime boundaries of the world: Antunes, 'Some Thoughts on the Technical Input in Maritime Delimitation' in Colson & Smith (eds), *International Maritime Boundaries* (2005) 3377, 3380.

[1172] Árnadóttir (n 963) 382-3.

[1173] Árnadóttir (n 133) 168.

[1174] Árnadóttir (n 963) 405.

stability of boundaries delimited by adjudication, stating '[b]oundaries established by an ICJ judgment or by a decision of an arbitral body under UNCLOS are certainly binding, final, and not appealable', citing Article 296(1) LOSC and Article 94(1) UN Charter for this proposition.[1175] She offers no more reasoning for the argument and the remainder of her article is directed solely to delimitation by treaties. Soons raises the issue of boundaries delimited by adjudication, but then concludes that they are resilient by claiming '[t]he legal situation here is in essence the same as in the situation of boundaries established by agreement discussed in the previous paragraphs'.[1176] Busch refutes the threat of challenging delimitation agreements on the ground of a fundamental change of circumstances but then extends her conclusion by remarking '[s]imilarly, boundaries established by international adjudication are considered final, binding and not appealable'.[1177] No independent analysis is offered to justify this inference. The ILA's Sea Level Rise Committee, after analysing the stability of boundaries delimited by agreement, asserts 'the same approach should also be taken in cases of maritime boundaries established by judgments of international courts or by arbitral awards'.[1178] It does not specify how this approach of stability and permanence for boundaries delimited by adjudication can be availed through the rules governing the finality of judgments. The ILC's Study Group on Sea-level Rise concludes that international law favours the 'legal stability, security, certainty and predictability of the maritime delimitations effected by agreement or by adjudication' but only offers reasoning to justify this conclusion in relation to the former.[1179] It seems, therefore, that the resilience of boundaries delimited by adjudication in the context of sea-level rise has not been the subject of any serious deliberation or independent study.

[1175] Lisztwan (n 133) 179-180.

[1176] Soons (n 19) 229.

[1177] Busch (n 133) 179.

[1178] ILA (n 18) 25.

[1179] Aurescu & Oral (n 21) 53.

It would be useful, at the outset, to clarify that the opposability of boundaries delimited by adjudication to third states that were not party to the delimitation proceeding arises in precisely the same fashion as it does for boundaries delimited by treaty. As specified by the ICJ on multiple occasions,[1180] decisions on delimitation are only opposable to those states party to the proceeding and do not create obligations for third states. However, this does not mean third states have no obligation to respect a boundary delimited by adjudication. Rather, as argued in the preceding section, this obligation arises independent of the judgment, through the acquiescence of third states to the exclusive competence of the coastal states that carried out the delimitation combined with the general obligation to respect their rights and jurisdiction. Of course, in scenarios where a third state has a claim to the waters subject to delimitation, the delimited boundary would not acquire opposability to this state – but this is so regardless of sea-level rise. Moreover, as demonstrated in the preceding section, acquiescence to a boundary is considered permanent due to the principle of stability of boundaries. Therefore, coastal retreat cannot affect the obligation to respect adjudicated boundaries for third states.

However, demonstrating the opposability of adjudicated boundaries to the parties that conducted the delimitation is more complex. There are, in principle, three ways such a party could attempt to challenge a boundary delimited by adjudication: by seeking an interpretation of the original judgment, by requesting a revision of the original judgment or by bringing entirely new proceedings for delimitation based on changed coastal geography. Each will be considered in turn.

The first route a party may employ is seeking an interpretation of the original delimitation judgment or award, asking the relevant adjudicatory body to clarify the effects of sea-level rise

[1180] Tunisia/Libya (Application by Malta for Permission to Intervene) 20; Libya/Malta (Application by Italy for Permission to Intervene) 26; Land, Island and Maritime Frontier Dispute (Application by Nicaragua for Permission to Intervene) 133; Cameroon v. Nigeria (Application by Equatorial Guinea for Permission to Intervene) 1031.

for the delimited boundary. Article 60 of the ICJ Statute states that if a dispute arises concerning the 'meaning or scope of [a] judgment, the Court shall construe it upon the request of any party'. Article 33(3) of the Statute of the ITLOS contains an identical provision empowering the Tribunal to interpret its own judgment. Notably, although Article 37 of the Permanent Court of Arbitration's ('PCA') Rules of Procedure also permits parties to seek an interpretation of the award, this right is only available for 30 days following receipt of the award. Since this time period is not sufficient for the manifestation of material coastal changes, it appears that the route of interpretation is of little use in the case of boundaries adjudicated by a PCA award. Moreover, in the Interpretation of the Asylum Case Judgment, the ICJ noted that such proceedings are to be brought 'solely to obtain clarification of the meaning and the scope of what the Court has decided with binding force, and not to obtain an answer to questions not so decided'.[1181] There, Colombia sought clarification of the original judgment, which had determined that asylum had been granted to Haya de la Torre in breach of the Havana Convention. Colombia wished to know whether this implied that Haya de la Torre had to be surrendered to the Peruvian authorities. The Court, however, declared Colombia's request inadmissible:

> The "gaps" which the Colombian Government claims to have discovered in the Court's Judgment in reality are new questions, which cannot be decided by means of interpretation. Interpretation can in no way go beyond the limits of the Judgment, fixed in advance by the Parties themselves in their submissions.[1182]

Similarly, in the Interpretation of the Judgment in Tunisia/Libya, the ICJ noted '[s]o far as the Tunisian request for interpretation may go further, and seek "to obtain an answer to questions not so decided", or to achieve a revision of the Judgment, no effect can be given to it'.[1183] In the Interpretation of the Anglo-French Continental Shelf Award, the Tribunal

[1181] Interpretation of the Asylum Case 402.

[1182] Ibid 403.

[1183] Tunisia/Libya (Interpretation) 223.

observed that 'the subject of a request for interpretation must genuinely be directed to the question of what it is that has been settled with binding force in the decision, that is in the dispositif; the reasoning cannot therefore be invoked for the purpose of obtaining a ruling on a point not so settled in the dispositif'.[1184] It went on to explain what this means:

> "Interpretation" is a process that is merely auxiliary, and may serve to explain but may not change what the Court has already settled with binding force as res judicata. It poses the question, what was it that the Court decided with binding force in its decision, not the question what ought the Court now to decide in the light of fresh facts or fresh arguments.[1185]

This was also reiterated by the ICJ in the Temple of Preah Vihear (Interpretation) case.[1186] In the context of sea-level rise, a party would bring an interpretation proceeding only where the adjudicatory body had failed to account for coastal retreat and potential changes to the baseline in its original decision. Under such circumstances, it appears that the proceeding seeks to raise 'new questions' rather than questions actually addressed by the Court or Tribunal, in light of 'fresh facts' that the Court or Tribunal was not cognizant of. As Rosenne observes, 'the Court, when giving an interpretation, refrains from any examination of facts other than those which it has considered in the judgment under interpretation, and consequently all facts subsequent to that judgment'.[1187] As such, it appears unlikely that an interpretation proceeding could be brought to clarify the effects of sea-level rise on a delimitation award or judgment.

The second route a party may employ is the revision of judgments. This is the route that Árnadóttir perceives to be a threat to the stability of adjudicated boundaries.[1188] Article 61 of the Statute of the ICJ permits parties to seek the revision of a judgment on 'the discovery of some fact of such a nature as to be a decisive factor, which fact was, when the judgment was

[1184] Anglo-French Continental Shelf (Interpretation) 295.

[1185] Ibid 295-296.

[1186] Preah Vihear (Interpretation) 303.

[1187] Rosenne, *Interpretation, Revision and Other Recourse from International Judgments and Awards* (2007) 96.

[1188] Árnadóttir (n 133) 168.

given, unknown to the Court and also to the party claiming revision'. However, such revision may not be sought 'after the lapse of ten years from the date of the judgment'.[1189] Similarly, Article 127 of the ITLOS Rules permits such applications for revision to be made to the Tribunal, 'at the latest within six months of the discovery of the new fact and before the lapse of ten years from the date of the judgment'. Therefore, in circumstances where coastline changes occur after a period of ten years from the original judgment, revision cannot be availed through the ICJ and ITLOS. The PCA's Rules do not allow for the revision of awards, so this route is unavailable to coastal states where the boundary has been delimited by an Annex VII Tribunal unless revision is explicitly stipulated for by the parties. Moreover, jurisprudence on revision proceedings demonstrates that this procedure can only be availed for new facts that were in existence at the time the original judgment was given, and not for new facts that have occurred subsequently. As explained in the Application for Revision to the Genocide Case Judgment:

> The Court would begin by observing that, under the terms of Article 61, paragraph 1, of the Statute, an application for revision of a Judgment may be made only when it is "based upon the discovery" of some fact which, "when the Judgment was given", was unknown These are the characteristics which the "new" fact referred to in paragraph 2 of that Article must possess Thus both paragraphs refer to a fact existing at the time when the Judgment was given and discovered subsequently. A fact which occurs several! years after a Judgment bas been given is not a "new" fact within the meaning of Article 61, this remains the case irrespective of the legal consequences that such a fact may have.[1190]

This point was also stressed by the arbitral tribunal in the Battus case.[1191] In the context of sea-level rise, changes to the coast are new facts that occur subsequent to the original judgment, and not new facts in existence at the time the original judgment was given. Therefore, the route of revision is also not available to question boundaries delimited through adjudication.

[1189] Article 61(5) ICJ Statute.

[1190] Application for Revision to the Genocide Case 30.

[1191] Battus 286.

The third route available to a coastal state is to bring a fresh proceeding before a court or tribunal. However, Article 60 of the ICJ Statute notes that a decision of the Court 'is final and without appeal'. Article 33(1) of the ITLOS Statute and Article 34(2) of the PCA Rules contain similar stipulations. Together, these provisions reflect res judicata, a general principle of law according to which 'a final adjudication by a court or arbitral tribunal is conclusive' and 'an issue decided in a judgment or award may not be relitigated'.[1192] It is this principle that Árnadóttir,[1193] Lizstwan,[1194] Soons,[1195] the ILA Committee,[1196] and the ILC Study Group[1197] invoke to justify the resilience of adjudicated boundaries in relation to the states that participated in the delimitation proceeding. However, in order for res judicata to serve as a bar to a subsequent proceeding, there must be identity of persona, petitum, cause petendi, i.e. the parties to the two proceedings, the relief sought and the grounds advanced to obtain the relief must all be identical.[1198] Bin Cheng observes that res judicata only prohibits a legal proceeding when it involves 'the same question at issue' that was decided in a prior proceeding.[1199] Similarly, Lowe notes that the res judicata only applies to a question of law or fact 'distinctly put in issue and distinctly determined by a court of competent jurisdiction'.[1200] He notes further that the principle does not prevent a 'party from advancing a legally distinct cause of action

[1192] Dodge, 'Res Judicata' in MPEPIL (2021) ¶1. See also: China Navigation Co. 65; Trail Smelter 1950; Corfu Channel (Compensation) 248; Belgium v. Senegal 438; Pulp Mills 69; Nicaragua v. Colombia (2016) 124.

[1193] Árnadóttir (n 963) 382-3.

[1194] Lisztwan (n 133) 179-180.

[1195] Soons (n 19) 229.

[1196] ILA (n 18) 25.

[1197] Aurescu & Oral (n 21) 53.

[1198] Nicaragua v. Colombia (2016) 124.

[1199] Cheng, *General Principles of Law* (1987) 345-6.

[1200] Lowe, 'Res Judicata and the Rule of Law in International Arbitration' 8 African Journal of International & Comparative Law (1996) 38, 39.

arising from the same facts'.[1201] Kulick,[1202] Bowett,[1203] and Theofanis[1204] concur with this conclusion. This point also finds support in jurisprudence. In the Haya de la Torre case, even though the factual matrix relied on was identical to that of the Asylum case and the questions raised in the two proceedings were related, the Court ruled that res judicata was not applicable.[1205] Although the question of surrender of a refugee was related to the question concerning the legality of asylum, the latter having been determined in the Asylum case, it was still a distinct issue and hence there was no bar to the proceeding.[1206] Similarly, in the China Navigation Company Case, the arbitral tribunal rejected the plea of res judicata, noting:

> It is a well-established rule of law that the doctrine of res judicata applies only where there is identity of the parties and of the question at issue. The only matter before His Britannic Majesty's Supreme Court was the liability of the China Navigation Co., Ltd., as owners of the Newchwang, whereas the question submitted to this Tribunal is the liability of the United States Government as owners of the Saturn. Whatever, therefore, be the connection in fact between the two questions, they are not identical.[1207]

Several other decisions also support this narrow construction of the res judicata principle which requires complete identity between the questions of law put to issue in the two proceedings.[1208] However, this reading creates a problem in the context of sea-level rise. Were a state to bring a fresh proceeding for delimitation due to coastal retreat, it is unlikely that res judicata would operate as a bar because although the relief sought is identical, the grounds advanced are arguably distinct since they rely on the new geographic configuration of the

[1201] Ibid 40.

[1202] Kulick, 'Article 60 ICJ Statute, Interpretation Proceedings, and the Competing Concepts of *Res Judicata*' 28(1) Leiden Journal of International Law (2015) 73.

[1203] Bowett, '*Res Judicata* and the Limits of Rectification of Decisions by International Tribunals' 8 African Journal of International & Comparative Law (1996) 577.

[1204] Theofanis, 'The Doctrine of Res Judicata in International Criminal Law' 3(3) International Criminal Law Review (2003) 195.

[1205] Haya de la Torre 80.

[1206] Ibid.

[1207] China Navigation Co. 65.

[1208] See, for instance: CME Czech Republic v. The Czech Republic 100-101; Application of the Genocide Convention 86; Nicaragua v. Colombia (2016) 124.

coastline. Alternatively, even if altered baselines are not sufficient to constitute distinct grounds, and res judicata bars a new delimitation proceeding, coastal states can still bring fresh proceedings that seek to question the legal validity of the delimited boundary in light of retreating coastlines or to seek the Court's opinion on the effects that coastal change might have on the boundary. In both these scenarios, it is clear that the legal issue raised is distinct from the earlier delimitation proceeding: while the earlier proceeding concerned the actual division of coastal entitlements, the subsequent proceeding questions the validity and scope of that division in the context of sea-level rise. Therefore, res judicata would not bar new proceedings that question adjudicated boundaries.

This does not imply, however, that the resilience of adjudicated boundaries rests on unfirm footing. It is one matter to initiate a legal proceeding, and quite another to succeed in it. Even if coastal states were to bring fresh proceedings that question delimited boundaries, it appears very likely that the court or tribunal would uphold the original delimitation even in the context of sea-level rise. The reason for this is the principle of stability of boundaries. As discussed above, when boundaries are delimited, they are subject to considerations of 'stability and finality',[1209] 'definitiveness and permanence'.[1210] As the Tribunal in the Bay of Bengal Arbitration observed in response to Bangladesh's contention that climate change would undermine the validity of the boundary delimited:

> In the view of the Tribunal, this argument is not relevant. The issue is not whether the coastlines of the Parties will be affected by climate change in the years or centuries to come. It is rather whether the choice of base points located on the coastline and reflecting the general direction of the coast is feasible in the present case and at the present time…

[1209] Preah Vihear 34.

[1210] Beagle Channel 88-89.

> In the view of the Tribunal, neither the prospect of climate change nor its possible effects can jeopardize the large number of settled maritime boundaries throughout the world. This applies equally to maritime boundaries agreed between States and to those established through international adjudication.[1211]

Similarly, in the Application for Revision of the Land, Island and Maritime Frontier Dispute Judgment, El Salvador sought to question the 1992 Judgment of the Court that delimited its boundary with Honduras by arguing that the river on which the Court had based its decision had changed its course. The Court observed, in response, that '[e]ven if avulsion were now proved, and even if its legal consequences were those inferred by El Salvador, findings to that effect would provide no basis for calling into question the decision taken by the Chamber in 1992'.[1212] Indeed, as previously outlined, there is overwhelming evidence that courts and tribunals favour the stability and continuity of delimited boundaries. This proclivity for permanent boundaries is also reflected in scholarship.[1213] It can therefore be surmised that adjudicated boundaries are resilient in the context of sea-level rise. However, this is not due to the principle of res judicata, as is frequently presumed in the literature. Res judicata does not operate as a bar to new proceedings in such circumstances. Instead, the resilience of adjudicated boundaries can be attributed to a separate principle: the principle of stability of boundaries.

## Conclusion

This Chapter considered the resilience of boundaries delimited by treaty and by adjudication to coastal changes caused by sea-level rise. It began by outlining the primary benefit offered by the act of delimitation: that it creates a fixed boundary that does not ambulate with baseline changes, unlike an undelimited entitlement limit, thereby providing greater predictability for the spatial jurisdiction of a coastal state and preserving access to crucial economic resources that the state depends on. The Chapter then examined the grounds on which the resilience of

[1211] Bay of Bengal Arbitration 62-63.

[1212] Land, Island and Maritime Frontier Dispute (Revision) 407.

[1213] See discussion in Section III B.

delimited boundaries could be challenged by appraising the scholarship on this subject. Certain gaps in the literature were identified through this survey. It was concluded that, while several authorities argue for the permanence of delimited boundaries, they do so without detailed analysis of the basis for such permanence and the routes through which it could be challenged. Where grounds to challenge the resilience of delimited boundaries are identified, primary focus is accorded to the termination of delimitation treaties on the grounds of a 'fundamental change of circumstances'. The second ground that is sometimes considered in the literature, principally through the writing of Lizstwan and Árnadóttir, is the pacta tertiis rule. They argue that boundaries could lose their opposability in circumstances where sea-level rise generates third-party rights in the area of delimitation. Finally, that boundaries delimited through judicial decisions are subject to distinct rules is rarely acknowledged, and the stability of adjudicated boundaries is never independently analysed. These were the issues that this Chapter set out to address.

The second section of this Chapter considered the termination of delimitation treaties through Article 62 VCLT. It argued, first, that delimitation falls within the ambit of executed treaty provisions, such that termination of a delimitation treaty has no real impact on the boundary delimited. This was demonstrated through a review of scholarship, jurisprudence, state practice and the preparatory work of the VCLT. Therefore, it was concluded that the debate on the boundary-treaty exception to Article 62 could be entirely avoided, since the applicability of the status of executed treaty provisions to maritime boundaries isn't contested. Nonetheless, the section then considered whether this exception did apply to maritime delimitation treaties to prove that both the boundary and the treaty (which often contains important continuing obligations) are resilient to the effects of sea-level rise. It was argued that maritime delimitation treaties were exempt through Article 62(2)(a), and that maritime boundaries are true boundaries for the purposes of this provision. This was achieved by

examining the ordinary meaning of the term ‘boundary’, the object and purpose of the VCLT, considerations of good faith interpretation such as the ut res principle, other relevant rules of international law and a detailed review of state practice on the use of the term. Through this analysis, it was concluded that neither maritime delimitation treaties nor the boundaries they delimit are vulnerable to the threat of termination due to a fundamental change of circumstances.

The third section of this Chapter considered the impact of the pacta tertiis rule on delimited boundaries. It argued that the obligation for third parties to respect a delimited boundary does not arise through the delimitation treaty, but through their own acquiescence. As a result, the pacta tertiis rule, a rule of treaty law, has no role to play in this discussion. Rather, the appropriate question to ask is whether acquiescence to a boundary is intended to be conditional, such that if third party rights were to be created in the region of delimitation they could be claimed, or whether it was intended to be a perpetual concession to the exclusive jurisdiction of the states that conducted the delimitation. By employing the principle of stability of boundaries, the section concluded that the correct answer must be the latter. Through a review of jurisprudence and academic writing on this principle, it was argued that boundaries are intended to be permanent, definitive and not subject to constant review or challenge. Therefore, a state that acquiesces to an international maritime boundary does so in perpetuity and cannot disavow this in the future to claim rights in the delimited waters. Therefore, delimited boundaries are not vulnerable to challenge due to the creation of third-party right.

The fourth section considered the case of adjudicated boundaries. While most writing asserts that the res judicata principle preserves such boundaries, it rarely explains how this is the case. This section examined the routes through which an adjudicated boundary could be challenged, identifying three: interpretation, revision and a fresh proceeding. The first two were shown to be inapplicable, since they only allow a Court to consider facts and issues deliberated

in the original proceeding, and not fresh facts that arose subsequently, such as the impact of sea-level rise on the coasts of the states in question. However, it was demonstrated that res judicata does not serve as a bar to fresh proceedings that seek to raise distinct issues from the original proceeding, such as the impact of sea-level rise on a delimited boundary. However, this does not mean that adjudicated boundaries are vulnerable to challenge in cases of coastal retreat. It was shown that courts and tribunals are likely to rule in favour of the continued validity of such boundaries due to the high priority accorded to the principle of stability discussed in Section III. Consequently, while adjudicated boundaries are resilient to coastal changes, this does not arise through the res judicata principle but through the principle of stability of boundaries.

It can therefore be concluded that delimitation offers significant utility in the context of sea-level rise. While it can only be employed in circumstances where there is an existing overlap of entitlements, which reduces it scope of applicability, the resilience it offers does not appear to have any noticeable limits. Unlike baselines and entitlement limits which, even when stabilised, can be challenged under situations of significant coastal retreat, delimited boundaries are not subject to this threat since their fixity does not depend on the location of the coast, but on the principle of stability and on the acquiescence of third parties. The only potential scenario in which such a boundary could be deprived of opposability is if complete submersion of land territory led to a state being divested of its statehood – although this seems unlikely.[1214] However, the issue of lost statehood lies outside the scope of this thesis. It is sufficient to conclude that delimited boundaries do offer significant resilience to the threat of sea-level rise.

[1214] See: J. McAdam, *Climate Change, Forced Migration and International Law* (2012); Camprubi (n 18); ILA (n 18).

# Conclusion

The fickleness of sea-level rise renders it a particularly difficult issue to tackle in international law. While some states stand to lose everything - even, arguably, their very statehood - in a narrow window of time, the impact for others will be minimal and only manifest far into the future. Some states could even stand to gain from this predicament, patiently accruing expanses of maritime entitlement forsaken by others. International coordination to seek an immediate legal solution, while necessary, seems a remote possibility; it stands to reason that numerous states would rather pause to see where the nautical chips of anthropogenic climate change fall, than to dither over their impact just yet. That states would commit to a permanent 'fixing' of baselines or entitlement limits, as some advocate, when their stakes in this contest have still not crystallised appears improbable. Even if consensus were developed, framing novel rules for maritime jurisdiction is never a simple task. The history of the law of the sea indicates that the creation of these rules will require a protracted effort. It is therefore unlikely that a new framework for stable baselines and entitlement limits can be catalysed in the near future.

Instead, this thesis advocated recentring attention on the existing legal framework, to uncover tools within the present law of entitlements and delimitation that could be employed by coastal states to bolster the resilience of their maritime claims. The thesis examined several provisions of the LOSC that may assist in this endeavour, uncovering significant yet bounded utility within them that could be applied to delay the impact of sea-level rise. To comprehensively address all effects of sea-level rise on maritime jurisdiction, it is unmistakeable that a new legal framework for the law of the sea will be needed. Yet, as this thesis demonstrated, there is much that coastal states can still do within the existing framework to stabilise their claims. This section will summarise the arguments and conclusions of the

thesis, outlining a plan of action for their practical implementation. Avenues for further research that could help build on these arguments will also be discussed.

## An Unsettling Future

The thesis commenced by outlining why sea-level rise endangers the stability of maritime jurisdiction. The first Chapter identified changes to coastal geography predicted for the coming years, relying on IPCC reports. It noted that, according to the Panel's latest estimates, sea-level rise of up to 1.10m is predicted for the end of the century. This could wipe out the territory of several small-island states, and submerge significant portions of landmass for low-lying states. It also acknowledged the conservative methodology employed in arriving at these estimates, noting the high degree of uncertainty surrounding ice sheet loss from the cryosphere. Other factors that would contribute to sea-level rise were also recognised, including flooding, coastal erosion, increased precipitation, and a higher frequency and intensity of extreme weather events. The potential to damage the innate resilience of the shore through the destruction of natural barriers such as mangroves and coastal reefs, and through salinization, was discussed. The increasingly complex interaction of these various factors was identified to explain why they may compound to produce coastal damage that exceeds the sum of each discrete component. Finally, the relative nature of these impacts was recognized. The effects of sea-level rise and extreme weather events will not be uniform across the globe. Instead, they will be felt disproportionately by certain states while others go relatively unharmed.

## Boundaries, Adrift

The thesis proceeded to analyse how these predicted changes could impact the existing legal framework for jurisdiction at sea. The concept of the baseline as an approximation of the shore was analysed, as was the idea of maritime entitlements as zones of jurisdiction at sea. The role of the baseline in determining the spatial configuration of entitlements was discussed to explain

why a retreat in the shoreline could whittle down maritime entitlements. The inundation of rocks, loss of insular status, and the potential loss of statehood due to a complete submergence of land territory were also recognised as circumstances that could extinguish entire entitlements at once. Finally, the potential of disturbing settled boundaries was recognized, noting that the opposability of such boundaries may be disputed following a movement in baselines. The impact of such unpredictable changes in maritime jurisdiction on various stakeholders was considered. All in all, it was reasoned that sea-level rise threatens the foundation of the spatial division of the oceans and carries the potential to unsettle carefully constructed rules on entitlement limits and delimited boundaries established through decades of work.

## An Improbable Strategy

The thesis then examined how scholarship within the law of the sea addresses these impacts on maritime entitlements and delimitation. While this issue has been the subject of much attention, particularly since 2010, most writing on sea-level rise and maritime entitlements follows a predictable template. While some tools within the existing law are identified to mitigate the effects of sea-level rise, they tend to be dismissed after brief consideration and without a complete analysis of the arguments that could be employed to justify their use. Instead, the freezing of baselines and entitlement limits is proposed, either through a new customary rule or multilateral instrument. Such freezing is argued to be the only viable solution to tackle the threat of sea-level rise. Three problems were identified with this focus on new rules coupled with a neglect for existing tools within the law of the sea. First, it is unclear how political consensus will be generated to adopt new rules since several prominent states stand to gain from the impact of sea-level rise. Therefore, this focus on new rules runs the risk of leaving coastal states with no actionable options to preserve their entitlements. Second, even if consensus is generated, it will be years before the new rules can be formulated and implemented. In the interim, coastal states will continue to suffer a loss of their maritime space

and will need strategies they can apply in the present to defer their legal losses and ensure their maritime claims live to see the promised future of a new legal framework. Third, even if existing rules are to be changed, this cannot occur until their resilience to sea-level rise is understood in depth. How else can one know which rules require change and which do not. Consequently, it was argued that effort would be better channelled towards examining measures that threatened coastal states may employ within the existing legal framework, to strategically apply, as far as possible, the law of entitlements and delimitation to bolster the resilience of their maritime claims. This was the gap in the literature that the thesis set out to address.

## Baseline Ambulation

The thesis commenced its study of doctrinal tools within the existing legal framework by examining the normative content of the normal baseline, the fountainhead for maritime claims. It acknowledged the two schools of thought on the interpretation of the phrase 'as marked on' in Article 5 LOSC, one construing this phrase as the charted delineation of the low-water line while the other argues it is the vertical datum employed in such delineation. However, the thesis postulated that the answer to this debate is not relevant for determining whether the normal baseline ambulates, as those who participate in it believe. Rather, the question of whether Article 5 refers to a charted line or chart datum is only important for determining how the normal baseline ambulates.

Through a close examination of the treaty's preparatory work, the thesis revealed that although the reference to charts originally insinuated the preponderance of the chart datum at the Hague Conference, it was subtly altered to signify the delineated line over the course of ILC deliberations and UNCLOS I. However, through a contextual examination of Article 5, paired with a study of state practice and preparatory work, the thesis disclosed the existence of

an obligation to ensure the enduring accuracy of the charted line. Delimitation jurisprudence was employed to confirm this deduction. Through this study it was shown that even the charted line ambulates; yet, the manner in which it ambulates is distinct from the movement of the chart datum line.

Were Article 5 construed to be a reference to the vertical datum employed in a chart, ambulation of the baseline would be automatic. Both the low-water line and the jurisdiction that ensues from it would be constantly in flux. Although charts would carry presumptive weight, they would be susceptible to challenge at all times and for even small deviations from the datum line. As a result, sea-level rise and geographic change would cause tremendous instability to the baseline and entitlements of a coastal state, offering it little measure of control over this process. Similarly, foreign vessels passing through its waters would have little knowledge of where the precise limits of any coastal state entitlement lay at any given time.

By contrast, the charted line offers a greater degree of resilience. Changes to the baseline are not automatic but are triggered only when the coastal state chooses to update its charts. Although an obligation to ensure the continuing accuracy of the charted line exists, its conditions are not breached at the instant of change nor, indeed, by every minor coastal attrition. Rather, as case law, state practice and preparatory work indicate, it is only appreciable change that triggers this obligation. It is only when a coastal state refuses to account for such change within a reasonable time-period that its charted line becomes susceptible to challenge. As a result, the state retains some measure of control in timing the changes to its entitlement limits and can adequately prepare for adjustments to its jurisdiction. Foreign vessels, too, can navigate through waters with certainty of their limits. Therefore, by offering coastal states some degree of control in coordinating baseline ambulation, the charted line does offer the cogent advantage of relative stability.

## Datum Calculations

Having examined the normative content of the normal baseline, and the manner in which it ambulates, the thesis outlined some methods of calculating the charted line that could be employed to inhibit its movement. It was noted, crucially, that there exists no legal obligation to follow a prescribed method of calculating the vertical datum to be employed in charting a baseline. As a result, coastal states carry a significant degree of freedom in making this choice – freedom that can be used strategically to enhance the resilience of their maritime claims. First, the use of the Lowest Astronomical Tide datum was proposed, since it enables a coastal state to evade the effects of meteorological events, such as storm-surge induced extreme sea-levels, cyclones, hurricanes, flooding (all of which are predicted to occur with increased frequency and intensity as a consequence of sea-level rise). Second, the thesis proposed expanding the data set employed to calculate the vertical datum, measuring it over one or more metonic cycles, allowing the coastal state to slow down changes to its baseline. Third, the thesis argued for the use of more robust measures of central tendency in calculating the vertical datum, such as medians, trimmed or truncated means, interquartile means, and winsorized means, which suffer slighter variations when confronted with skewed data. Fourth, the thesis recommended that coastal states place tidal gauges strategically at points along the coast that are less susceptible to flooding or erosion, and that remain sheltered from the effects of sea-level rise, thereby making it more likely that they produce stable readings. While a lengthier study of vertical datum calculations could reveal several other tools that coastal states may employ to bolster the resilience of their normal baseline, it was sufficient to conclude, for the purposes of this thesis, that there is significant leverage to be gained by strategically employing the freedom conferred on coastal states to calculate the vertical datum used to chart the normal baseline.

## Straight Baselines

Following the study of normal baselines, and the strategies that could be employed to inhibit its movement, the thesis proceeded to examine the utility of straight baselines in mitigating the effects of sea-level rise on entitlements and delimitation. It began by outlining the benefits offered by straight baselines in the context of a retreating coast. While the normal baseline coheres to the coast for its entire length, the straight baseline is only fixed to the coast at its two endpoints. As a result, the latter category is less vulnerable to the threat of coastal retreat, since only geographic change at the endpoints can trigger an obligation of revision. This baseline is also easier to preserve through artificial measures and can often be revised by a straightforward linear extension of the endpoints, avoiding any palpable impact on the spatial configuration of a coastal state's entitlements. However, the most promising benefit offered by straight baselines was theorised to be their utility in deferring the obligation of revision for baselines drawn at highly-unstable coasts. Attention was drawn to Article 7(2) LOSC, which states:

> Where because of the presence of a delta and other natural conditions the coastline is highly unstable, the appropriate points may be selected along the furthest seaward extent of the low-water line and, notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective until changed by the coastal State in accordance with this Convention

It was argued that this provision could be applied directly to coastlines most vulnerable to sea-level rise to draw straight baselines that render the entitlement limits drawn from such shores more resilient to sea-level rise.

Academic critiques against such use of Article 7(2) in the context of sea-level rise were discussed. The argument that Article 7(2) is subordinate to Article 7(1), such that straight baselines may only be drawn at highly unstable coastlines that also possess a 'deeply indented and cut into' coastline, or a 'ringe of islands', was addressed first. It was pointed out that such a reading of Article 7(2) rendered it ineffective, since a coastal state could already draw straight baselines relying solely on the indented coast or the fringe of islands, using Article 7(1), and would have no need to resort to Article 7(2) at all. It was demonstrated that a reading of Article

7(2) which did not require a satisfaction of the criteria in Article 7(1) was better suited to the object and purpose of the LOSC. This interpretation was confirmed through the preparatory work of the LOSC.

The next critique discussed in the application of Article 7(2) to situations of sea-level rise was that its text made it applicable only where **'**because of the presence of a delta and other natural conditions the coastline is highly unstable'. The use of the conjunctive 'and' to interpolate 'delta' with 'other natural conditions' had been relied on by scholars to argue that these two are cumulative requirements which must both be satisfied to draw a straight baseline. As a result, the provision would only apply to instability produced at the mouths of river deltas, having very limited general applicability to circumstances of sea-level rise. This interpretation was disputed employing the preparatory work of the LOSC, and the Russian language version of the treaty text. It was demonstrated that, on a contextual reading, Article 7(2) refers to a collective class termed 'delta and other natural conditions' that produce coastal instability, any member of which is sufficient for the construction of straight baselines.

The Chapter then outlined the limitations that circumscribe the use of Article 7(2) in conditions of sea-level rise. It was acknowledged that the terms 'highly unstable' suggest the provision is not intended to cover all scenarios of coastal instability, but only those that meet a minimum threshold of severity. Next, it was noted that Article 7(2) permits a coastal state to defer the obligation of revision through the phrase 'notwithstanding subsequent regression of the low-water line, the straight baselines shall remain effective until changed by the coastal State'. However, the use of the imperative 'until' rather than the discretionary 'unless' implies that the postponement of this obligation is only temporary. The precise trigger to revive this deferred obligation was postulated to lie in Article 7(3), which provides that a straight baseline must coincide with the 'general direction of the coast' and that the sea areas it encloses 'must be sufficiently closely linked to the land domain'. Although calculating an appreciable

departure from the coast is a subjective exercise, some tools were outlined that could be employed to make this process more objective. It was further shown that, by demonstrating historic use of the waters enclosed by the straight baseline, the coastal state may be able to argue in favour of such a 'sufficiently close link'. The possibility of maintaining straight baselines connected to low-tide elevations under Article 7(4) was discussed. Finally, the strategic use of Article 16 LOSC was identified as a final path available to coastal states to render their baselines less susceptible to challenge. However, each of these tools was recognised to offer finite utility. When met with sea-level rise of a sufficient scale, their application breaks down. As a result, it was concluded that straight baselines offer significant but bounded promise in enhancing the resilience of maritime claims.

## Coastal Fortification

Chapters 2 and 3 were concerned with legal interpretive tools that a coastal could employ to inhibit the ambulation of its baseline when faced with sea-level rise. They recommended the use of datum calculations to inhibit movements of the normal baseline, and the use of straight baselines on retreating coasts to defer the obligation of revision. However, it was acknowledged that each of these tools carry finite limits beyond which their utility breaks down. In scenarios where such tools prove insufficient, however, the coastal state possesses an additional option to stabilise its baseline and the entitlement limits measured from it: the use of coastal fortification measures. Chapter 4 set out to unearth the legal justification for the use of such measures to stabilise the baseline, and to outline the limitations of such fortification exercises.

The Chapter began by noting the terms of Article 11 LOSC, which provides:

> For the purpose of delimiting the territorial sea, the outermost permanent harbour works which form an integral part of the harbour system are regarded as forming part of the coast. Off-shore installations and artificial islands shall not be considered as permanent harbour works.

Although this provision was frequently cited in the scholarship as the legal basis for the use of physical measures to stabilise the baseline, it was observed that this was often done without sufficient analysis of the rules of treaty interpretation. This was identified as a gap in the literature that the Chapter would address. While the ordinary meaning of the phrase 'permanent harbour works' was found to be ambiguous, a significant body of state practice on the application of Article 11 was uncovered that permitted the use of fortification works on the baseline. This interpretation also found support from other 'relevant rules of international law'. The preparatory work of the LOSC was employed to confirm this reading of Article 11.

The Chapter then engaged with critiques that could be levelled against such use of Article 11. It began by discussing the decision of the ICJ in the Black Sea Case. There, the Court adopted a narrow construction of the terms of Article 11 that excluded Sulina Dyke, a protective feature, from the ambit of 'permanent harbour works'. The Chapter demonstrated that this decision was arrived at without a complete consideration of the rules of treaty interpretation, and by sole reference to the preparatory work of the LOSC. It was further argued that the Court's reading of the travaux placed too much weight on tangential discussions concerning structures of excessive length. More direct statements on the use of coastal defence structures were not given sufficient credence.

The Chapter concluded by acknowledging the limitations that circumscribe the application of physical fortification measures under Article 11 to situations of sea-level rise. First, Article 11 only allows harbour works to be equated as 'part of the coast', suggesting that they are still bound to the requirement of a low-water mark, per Article 5 LOSC. Therefore, if submerged over time, they too will be subject to the obligation of revision as any other basepoint. Second, in situations of significant coastal retreat, the fortification works would not continue to serve a coastal-protective function, rendering them susceptible to challenge for no longer being an 'integral part of the harbour system' or for being structures of excessive length.

Third, while physical measures that seek to stabilise or protect the shore in its current form are permitted under Article 11, land reclamation measures that only seek to extend the coastline are not. Fourth, while fortification measures can be used to preserve the pre-existing status of a feature, they cannot be used to enhance its status. Finally, even whilst conserving the status of a feature through fortification measures, the costs involved may be prohibitive for several coastal states, making such measures practically unfeasible. Overall, it was concluded that coastal fortification measures are a promising tool to stabilise baselines and entitlements limits, yet one with finite utility in scenarios of extreme sea-level rise.

**The Continental Shelf Limit**

The previous three Chapters of the thesis examined techniques that could be employed to stabilise the baseline, through the use of vertical datum calculations, postponement of the obligation of revision via Article 7(2), and coastal fortification measures. These were measures of general utility that enabled a coastal state to bolster the resilience of all entitlement limits measured from the baseline. In Chapter 5, however, the thesis proceeded to examine a special case whereby the limit of a specific entitlement could be preserved even where the baseline from which it was measured was subject to ambulation: the continental shelf limit.

The thesis examined the utility of Article 76 LOSC as a means to stabilise continental shelf limits threatened by sea-level rise. It began by describing current scholarship on this subject, demonstrating that most arguments in favour of permanent continental shelf limits do not offer separate analysis on the terms ‘final and binding’ in Article 76(8) and ‘permanently describing’ in Article 76(9). Instead, these terms are often presumed to imply the same thing: that continental shelf limits, once established, remain fixed. Insufficient attention is paid to their distinct triggers. The parties to whom they are directed are rarely considered. That these terms apply to all continental shelf limits is routinely presumed despite arguments to the

contrary. The resilience implied by these terms is thought to be perpetual, unaffected by large-scale sea-level rise. The thesis identified these as gaps in the literature that would be addressed in turn.

It was postulated that the finality described in Article 76(8) is a distinct and accelerated route to stable continental shelf limits from that found in Article 76(9). The former arises immediately after limits are established on the basis of CLCS recommendations and does not require acquiescence from the international community while the latter does. It was demonstrated that the terms 'final and binding' in Article 76(8) are directed at all parties to the LOSC and not just the coastal state. This reading was shown to be more consistent with the text and structure of the continental shelf provisions within the LOSC, also supported by the treaty's preparatory work. Next, the Chapter argued that the permanence described in Article 76(9) was not restricted solely to continental shelf limits that lie beyond 200nm from the baseline but also protected those that lie at this distance. This interpretation was confirmed by reference to the text and context of the provision, the preparatory work of the treaty and the concept of natural prolongation found in Article 76(1).

Finally, the parameters to the resilience of the continental shelf limit were studied. It was concluded that while the limit remains fixed over time, the entitlement itself can still be extinguished where the landmass from which it is derived becomes submerged at high tide or, in the case of islands, loses its capacity to 'sustain human habitation or [an] economic life of their own'. Moreover, it was shown that even in cases where the limit of the continental shelf remains unaffected by sea-level rise, movements in the baseline may still necessitate changes to the revenue-sharing obligations of the coastal state as per Article 82 LOSC. Through this discussion, it was concluded that Article 76 offers significant utility to a coastal state seeking to preserve its continental shelf limits. By establishing permanent and fixed continental shelf limits, a coastal state is able to preserve its rights over vital economic resources that may enable

it to weather some of the socio-economic consequences of climate change. However, it was simultaneously acknowledged that, in extreme cases of sea-level rise, the resilience of the continental shelf limit may be fractured. Article 76 is a highly-promising tool in the context of sea-level rise, but not a panacea to the impact of sea-level rise on the continental shelf.

**Delimited Boundaries**

This thesis commenced by demonstrating that baselines, and entitlement limits measured from them, ambulate with sea-level rise. It then studied measures of general applicability that could be used to temporarily tether an ambulating baseline in place, thereby stabilizing all entitlement limits measured from it. Chapter 5 argued, exceptionally, that even where the baseline cannot be tethered in this fashion, the limit of the continental shelf is not subject to revision and is resilient to the effects of sea-level rise. The final Chapter of the thesis considered another exceptional case whereby the spatial configuration of coastal state jurisdiction could be preserved even when the baseline is subject to ambulation: delimited boundaries.

This Chapter considered the resilience of boundaries delimited by treaty and adjudication to coastal changes caused by sea-level rise. It began by outlining the primary benefit offered by the act of delimitation: that it creates a fixed boundary that does not ambulate with baseline changes, unlike an undelimited entitlement limit, thereby providing greater predictability for the spatial jurisdiction of a coastal state and preserving access to crucial economic resources that the state depends on. The Chapter then examined the grounds on which the resilience of delimited boundaries could be challenged by appraising the scholarship on this subject. Certain gaps in the literature were identified through this survey. It was concluded that, while several scholars support the permanence of delimited boundaries, they do so without detailed analysis of the basis for such permanence and the routes through which it could be challenged. Where grounds to challenge the resilience of delimited boundaries were identified,

primary focus was accorded to termination of delimitation treaties on the grounds of a fundamental change of circumstances. The second ground that was occasionally considered in the literature, principally through the writing of Lizstwan and Árnadóttir, was the pacta tertiis rule. It was argued that boundaries could lose their opposability in circumstances where sea-level rise generates third-party rights in the area of delimitation. Finally, that boundaries delimited through judicial decisions are subject to distinct rules was rarely acknowledged, and the stability of adjudicated boundaries was not independently analysed. These were the issues that the final Chapter set out to address.

It began its study by considering termination of delimitation treaties through Article 62 VCLT. It argued, first, that delimitation falls within the ambit of executed treaty provisions, such that the termination of a delimitation treaty has no impact on the boundary as per Article 70 VCLT. This was demonstrated through a review of scholarship, jurisprudence, state practice and the preparatory work of the VCLT. Therefore, it was concluded that the debate on the boundary-treaty exception to Article 62 could be entirely circumvented, since the applicability of the status of executed treaty provisions to maritime boundaries isn't contested. Nonetheless, the section then considered whether this exception did apply to maritime delimitation treaties to prove that both the boundary and the treaty (which often contains important continuing obligations) are resilient to the effects of sea-level rise. It was argued that maritime delimitation treaties were exempt through Article 62(2)(a), and that maritime boundaries are true boundaries for the purposes of this provision. This was achieved by examining the ordinary meaning of the term 'boundary', the object and purpose of the VCLT, considerations of good faith interpretation such as the ut res principle, other relevant rules of international law and a detailed review of state practice on the use of the term. Through this analysis, it was concluded that neither maritime delimitation treaties nor the boundaries they delimit are vulnerable to the threat of termination due to a fundamental change of circumstances.

Next, the Chapter considered the impact of the pacta tertiis rule on delimited boundaries. It argued that the obligation for third parties to respect a delimited boundary does not arise through the delimitation treaty, but through their own acquiescence. As a result, the pacta tertiis rule, a rule of treaty law, has no role to play in this discussion. Rather, the appropriate question to ask is whether acquiescence to a boundary is intended to be conditional, such that if third party rights were to be created in the region of delimitation they could be claimed, or whether it was intended to be a perpetual concession to the exclusive jurisdiction of the states that conducted the delimitation. By employing the principle of stability of boundaries, the section concluded that the correct answer must be the latter. Through a review of jurisprudence and academic writing on this principle, it was argued that boundaries are intended to be permanent, definitive and not subject to constant review or challenge. Therefore, a state that acquiesces to an international maritime boundary does so in perpetuity and cannot disavow this in the future to claim rights in delimited waters. As a result, delimited boundaries are not vulnerable to challenge due to the creation of third-party rights.

Finally, the Chapter examined the status of adjudicated boundaries. While most writing argues that the res judicata principle preserves such boundaries, it rarely explains why this is the case. This section examined the routes through which an adjudicated boundary could be challenged, identifying three: interpretation, revision and a fresh proceeding. The first two were shown to be inapplicable, since they only allow a Court to consider facts and issues deliberated in the original proceeding, and not fresh facts that arose subsequently, such as the impact of sea-level rise on the coasts of the states in question. However, it was demonstrated that res judicata does not serve as a bar to fresh proceedings that seek to raise distinct issues from the original proceeding, such as the impact of sea-level rise on a delimited boundary. However, this does not mean that adjudicated boundaries are vulnerable to challenge in cases of coastal retreat. It was shown that courts and tribunals are likely to rule in favour of the continued

validity of such boundaries due to the high priority accorded to the principle of stability discussed in previous sections. Consequently, while adjudicated boundaries are resilient to coastal changes, this does not arise through the res judicata principle but through the principle of stability of boundaries.

It was concluded that delimitation offers significant utility in the context of sea-level rise. While it can only be employed in circumstances where there is an existing overlap of entitlements, which reduces it scope of applicability, the permanence it offers does not appear to have any finite limits. Unlike baselines and entitlement limits which, even when stabilised, can be challenged under situations of significant coastal retreat, delimited boundaries are not subject to this threat since their fixity does not depend on the location of the coast, but on the principle of stability and on the acquiescence of third parties. The only potential scenario in which such a boundary could be deprived of opposability is if a state is divested of statehood, though examining this issue is beyond the scope of the thesis.

**A Blueprint for Action**

As indicated at the outset, a further objective of the thesis is to identify how the legal analysis of specific LOSC provisions could be applied cumulatively by coastal states to bolster the resilience of their maritime claims in the context of sea-level rise.

The first step that any coastal state ought to undertake, were it contemplating the impact of sea-level rise, would be to delimit the boundaries of any entitlements that overlap with those of another state. As demonstrated in Chapter 6, delimited boundaries do not ambulate with coastal retreat, and are resistant to the threat of termination. Moreover, since their permanence depends on acquiescence from third states and the principle of stability of boundaries, the resilience of delimited boundaries does not appear to have any finite limits in the context of sea-level rise. As such, delimitation constitutes the strongest tool that can be employed by a

coastal state, rendering permanent the bounds of any entitlement for the remaining lifespan of the coastal state.

The second step that a coastal state is advised to engage in is the establishment of continental shelf limits. Chapter 5 discussed why all continental shelf limits are permanently fixed and do not ambulate with sea-level rise. Those states with broad margin shelves would have already initiated this process through their submission to the CLCS and, once established in accordance with the recommendations of the Commission, their limits will be permanently tethered and opposable *erga omnes partes* by virtue of Article 76(8). All other states are advised to establish continental shelf limits promptly, and to publicise them under Article 76(9) and Article 84. Such limits are likely to survive all forms of coastal change, save those exceptional conditions where the territory from which the continental shelf is claimed is inundated in entirety or where insular status is lost. Even where such large-scale inundation or loss of insular status is possible, a coastal state can use fortification measures to defer the loss of its continental shelf. While baseline ambulation may affect revenue-sharing obligations under Article 82 to some degree, the coastal state's rights over the resources of the shelf will remain largely secure in the face of sea-level rise.

Having undertaken the prior steps, the only entitlements of a coastal state that remain vulnerable to the effects of sea-level rise are undelimited exclusive economic zones and territorial seas. To trammel any movements in the limits of these entitlements, the coastal state must stabilise the baseline from which they are measured. For this, there are six further steps they can take. First, they should use the Lowest Astronomical Tide datum for the calculation of their low-water mark. If this is not possible, they should use robust measures of central tendency in calculating the vertical datum, such as medians, trimmed or truncated means, interquartile means, and winsorized means, which suffer slighter variations when confronted with skewed data as compared to simple means. Second, they should expand the data set

employed to calculate the vertical datum, measuring it over one or more metonic cycles, allowing the coastal state to slow down changes to its baseline. Third, they should place tidal gauges strategically at points along the coast that are less susceptible to flooding or erosion, and that remain sheltered from the effects of sea-level rise, thereby making it more likely that they produce stable readings. These steps should significantly inhibit movements of the normal baseline and permit the coastal state to delay changes to its entitlement limits. However, these measures are not infallible. Eventually, sea-level rise of a sufficient scale will make its impact known no matter how the vertical datum is calculated and irrespective of where tidal gauges are placed. Once this occurs, a coastal state should opt to undertake the fourth step, which is the establishment of a straight baseline drawn across the two most resilient points available on its coast by employing Article 7(2). It is presumed, here, that the coastal instability faced by this state would be sufficient to satisfy any threshold requirement for Article 7(2) that may develop in the future.

When the two basepoints from which the straight baseline is measured are affected by sea-level rise, the coastal state can opt for the fifth step available, which is to use coastal fortification measures to preserve their low-water mark. Doing so is cost-effective, since only these two basepoints will require preservation as opposed to every basepoint along the coast used in the normal baseline. Even if sea-level rise submerges these protective structures at high-tide, so long as they remain above water at low-tide they can be retained as basepoints that have 'received general international recognition' under Article 7(4). However, if the scale of sea-level rise is sufficient to submerge them even at low-tide, or if the surrounding coast suffers significant change, such that these fortification structures can no longer be considered an 'integral part of the harbour system', the coastal state would have to resort to the sixth and final step. This is the use of Article 7(2) to defer its obligation of revision notwithstanding the regression of the low-water line. However, this step is temporary. When the fortified straight

baseline departs appreciably from the general direction of the coast, the obligation to revise it will be triggered. By demonstrating historic use of the waters enclosed by the straight baseline, the coastal state can argue in favour of a 'sufficiently close link' with its internal waters to postpone the designation of 'appreciable departure' and delay this trigger. Eventually, however, the baseline will have to be revised. Since ambulation is not automatic, the coastal state does carry some degree of control over the manner in which it occurs. It can prepare for such change, chart it and publicise it to all relevant stakeholders in advance. As a result, the ambulation of the baseline will not create uncertainty for those who operate in the relevant waters. However, once each of the steps outlined above is exhausted, it appears inevitable that baselines and the limits of undelimited territorial seas and exclusive economic zones will have to be revised.

## A Promising Future

The analysis here is an important first step in assessing the doctrinal tools available within the existing legal framework to defer the impacts of sea-level rise. The steps outlined above are promising, yet there may be several more that could be added to this blueprint for action. For example, there is much work to be done on leveraging the freedom granted to coastal states in calculating the vertical datum for the baseline. While the thesis offered some preliminary steps in this regard, those fluent with geodesy and cartography would be better equipped to provide more granular analysis that might well enhance the utility of datum calculation. Although this thesis studied the preservation of the continental shelf in particular, there may also be similar arguments to deploy for the resilience of the exclusive economic zone that could not be accommodated here. The principle of permanent sovereignty over natural resources could offer promise in this exercise. Equally, the thesis could not accommodate more detailed analysis on the loss of insular status under Article 121 LOSC, or on the preservation of archipelagic baselines and waters under Part IV LOSC. Each of these issues merits independent study, and

a detailed survey of the relevant provisions could reveal further steps to mitigate the legal consequences of sea-level rise. Their examination offers promising opportunities for further research and will, undoubtedly, enrich the arguments forwarded and conclusions drawn in this thesis.

# Appendix I

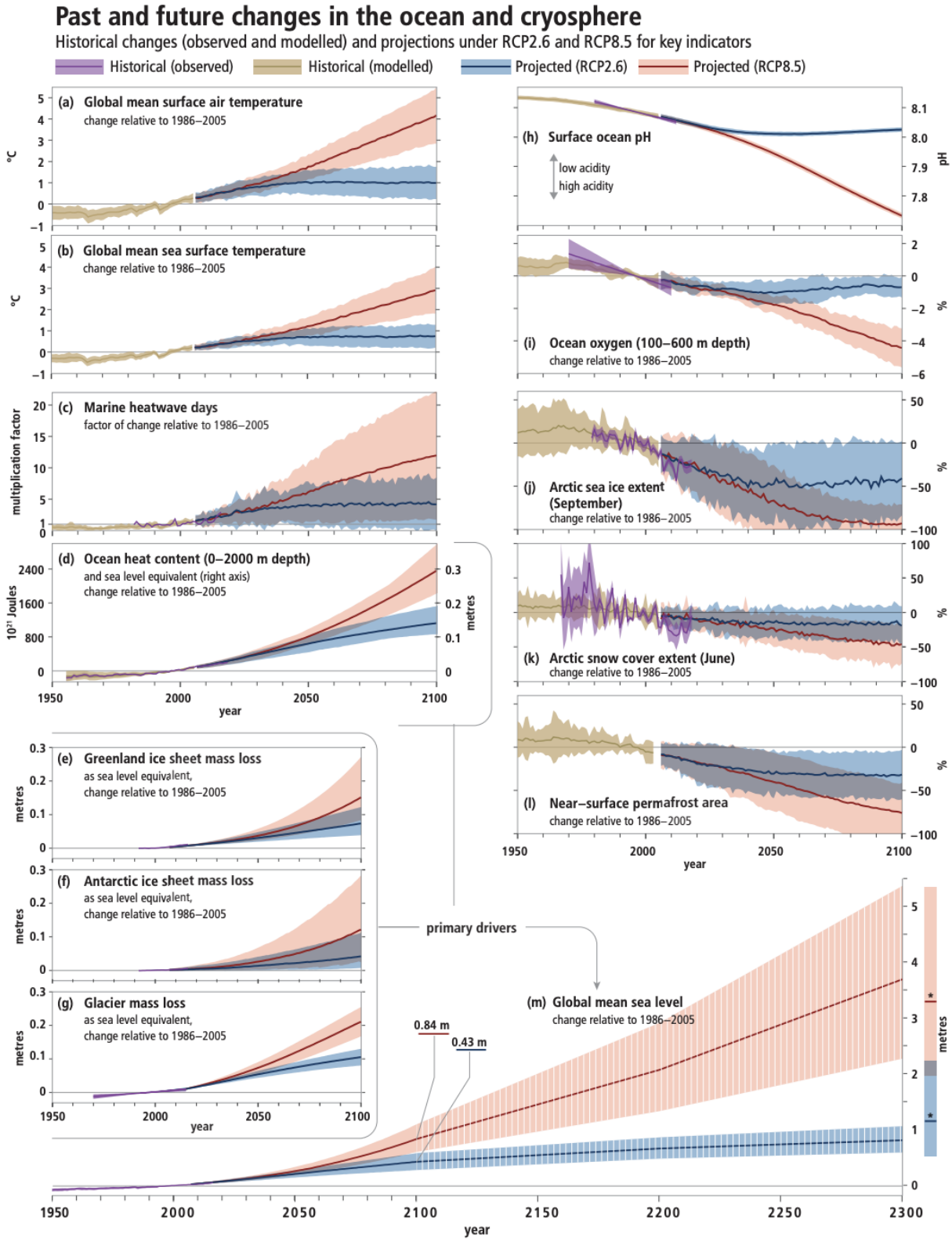


Figure 1: Observed and modelled historical changes in the ocean and cryosphere since 1950, and projected future changes under low (RCP2.6) and high (RCP8.5) greenhouse gas emissions scenarios[1215]

[1215] Graph reproduced from IPCC (n 87) 7.

# Appendix II

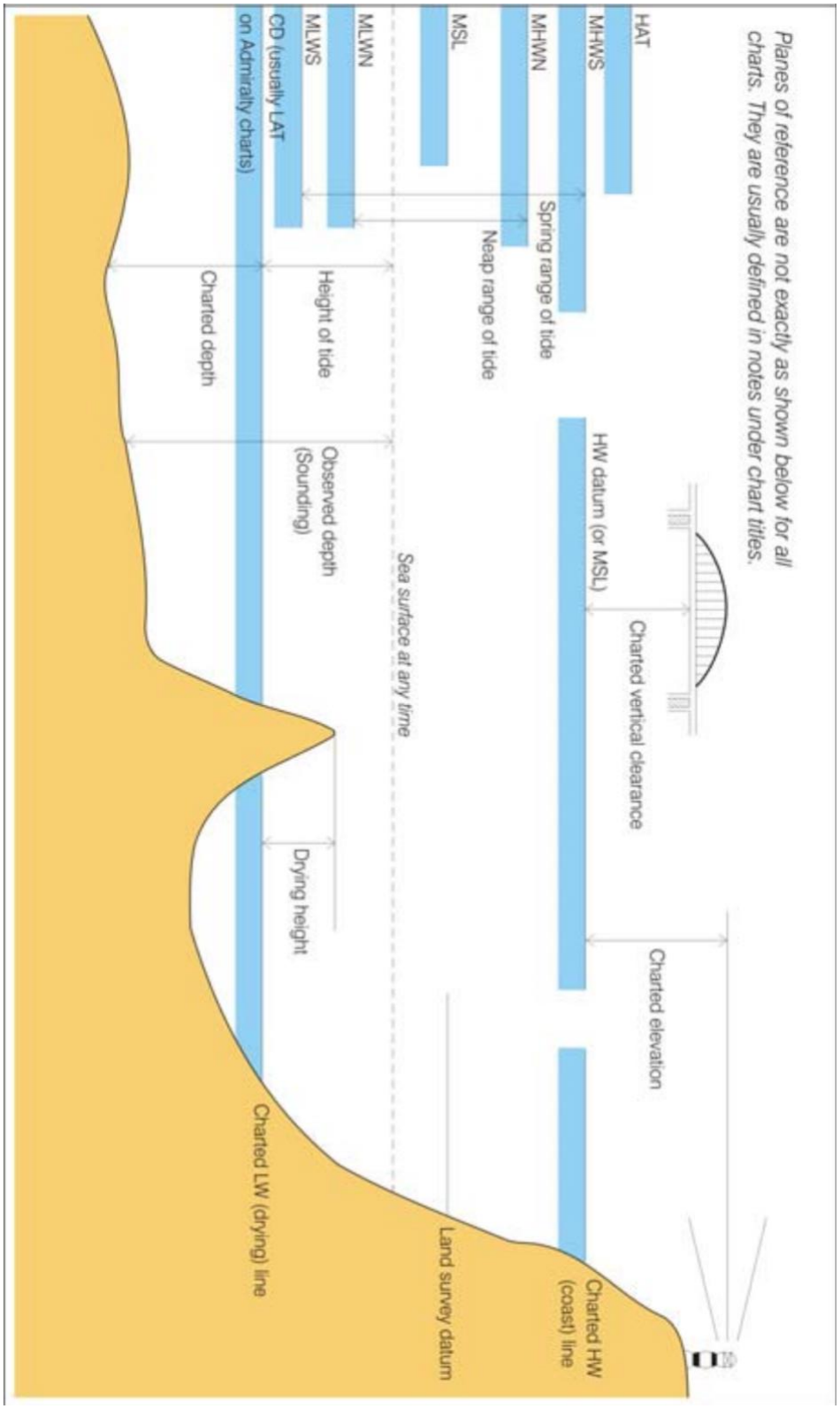


Figure 2: Graphical representation of the impact of tidal datum selection on the location of the baseline. The choice of the Lowest Astronomical Tide (LAT), Mean Low Water Springs (MLWS), Mean Low Water Neaps (MLWN), or Mean Sea Level (MSL) datum would produce a different line of intersection with the coast, thereby altering the locus of the charted baseline.[1216]

[1216] Image reproduced from IHO, Chart and Land Survey Vertical Datums (2021) 2

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