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ORIGINAL ARTICLE

INTERNATIONAL LAW AND PRACTICE: DEBATE

Provisional boundaries and alternative solutions to maritime delimitation

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Abstract

This article is a rejoinder to Dr. Massimo Lando's 'Stability of maritime boundaries and the challenge of geographical change' which proposes that positive international law offers no legal basis for the delimitation of fluctuating boundaries and discusses the many complexities involved in the delimitation and management of such boundaries. This rejoinder delves deeper into the main point of contention: the legal basis for fluctuating boundaries. It argues that coastal states have an inherent entitlement to a territorial sea and that Article 15 of The United Nations Convention on the Law of the Sea (UNCLOS) entails a default rule for the establishment of provisional fluctuating boundaries. This limit is not necessarily a strict median line because it may be adjusted by reference to special circumstances. Furthermore, the lack of explicit reference to provisional arrangements in UNCLOS Article 15 should not be read as an indication that there are no provisional boundaries in the absence of boundary agreements.

This article further argues that there are judicial precedents for fluctuating boundary-segments. The *Nicaragua* v. *Honduras* decision left a segment of the territorial sea un-delimited, resulting in a partially fluctuating boundary, until otherwise agreed. Moreover, the International Court of Justice (ICJ) explicitly established a mobile boundary-segment in *Costa Rica* v. *Nicaragua* but as highlighted by Dr. Lando, this was done with the permission of the parties. Much depends on the claims brought by disputing parties and their stance on fluctuating boundaries but this decision demonstrated the ICJ's willingness to employ fluctuating boundaries in response to coastal instability.

Keywords: delimitation; maritime boundaries; sea level rise; territorial sea; UNCLOS

1. Introduction

Leiden Journal of International Law recently published my article 'Fluctuating Boundaries in a Changing Marine Environmen'[1] and Dr. Massimo Lando wrote an intriguing reply.[2] These articles discuss the legal basis for fluctuating maritime boundaries and the feasibility of operating fluctuating boundaries where coastal geography is unstable. It seems that the most contentious point relates to the presence of a provisional boundary that neither state can cross in the absence of an agreement establishing a territorial sea boundary. Dr. Lando acknowledges that unilateral maritime limits generally fluctuate. He also highlights an important difference between unilateral limits and bilateral boundaries: the latter are fixed to a geographic location at the time of delimitation. This is generally true but the lack of agreed boundaries can lead to fluctuating provisional

[1]S. Árnadóttir, 'Fluctuating boundaries in a changing marine environment', (2021) 34 LJIL 471–87.

[2]M. Lando, 'Stability of maritime boundaries and the challenge of geographical change', in this issue, doi: 10.1017/S0922156522000061.

boundaries.[3] Dr. Lando rightly notes that the judicial precedence discussed in my earlier article are shaped by arguments presented by disputing parties and he explains the practical difficulties involved in delimiting and operating fluctuating maritime boundaries. Dr. Lando goes on to suggest that alternative solutions may be more suitable to meet the challenges posed by coastal instability and this is a welcome addition to the conversation. Indeed, fluctuating boundaries may be impractical and the prospect of fluctuating boundaries may act as a driver for states to adopt novel solutions. However, fluctuating boundaries are a viable option in some instances, as demonstrated by the ICJ's initiative to establish a mobile boundary-segment in 2018.[4]

Provisional boundaries differ from delimited boundaries established by agreements or judicial decisions insofar as they are not established at a particular date and cannot, therefore, be tied to the coastal geography of any specific time. These boundaries more resemble unilateral limits that continuously follow the applicable law because neither acquire the independent legal force that agreed boundaries possess. It is important for this discussion to distinguish between boundaries that fluctuate because they are not subject to an agreement or judicial decision and those that fluctuate despite having been established through such means. The former fluctuate for the same reason as unilateral limits; they have not been permanently established and must continuously satisfy the requirements of international law. The latter fluctuate because states, courts or tribunals have established fluctuating boundaries.

Dr. Lando submits that neither UNCLOS nor judicial decisions provide any legal basis for delimiting fluctuating maritime boundaries. He also maintains that such boundaries are complicated to delimit and manage. This rejoinder will build on my previous article and further demonstrate that UNCLOS does indeed provide a legal basis for fluctuating territorial sea boundaries. It goes on to address legal precedents for the establishment of fluctuating boundaries and, finally, discusses alternative solutions due to the complexity involved with fluctuating maritime boundaries.

2. UNCLOS as a legal basis for fluctuating boundaries

Dr. Lando challenges the assumption that UNCLOS provides a legal basis for provisional boundaries.[5] This is a core issue that essentially involves two questions. First, are maritime entitlements dependent on positive action by the coastal states or are they automatically generated? Second, does international law provide default rules for the delimitation of inherent maritime entitlements capable of generating provisional boundaries? These questions will be considered in the following sections.

2.1 Inherent maritime entitlements

Coastal states are obligated to define the limits to their maritime zones and to delimit boundaries where entitlements overlap. If a state makes no claim to an exclusive economic zone, no such limits or boundaries are required. However, the entitlement to a territorial sea and continental shelf is inherent or mandatory and failure to establish baselines and maritime limits does not dissolve such entitlements.[6] They exist without any action by the coastal state, and so do all necessary limits, even in areas of overlapping entitlements. A lack of established baselines leads to the conclusion that states operate normal baselines (identified by reference to the low-water line)[7] and the outer limits to maritime zones can be determined by reference to baselines and geomorphological

[3]Section 2.

[4]*Maritime Delimitation in the Caribbean Sea and the Pacific Ocean (Costa Rica v. Nicaragua) and Land Boundary in the Northern Part of Isla Portillos (Costa Rica v. Nicaragua)* (Judgment), [2018] ICJ Rep. 139, para. 82.

[5]M. Lando, *supra* note 2.

[6]See UNCLOS Art. 77(3) and J. Noyes, 'The Territorial Sea and Contiguous Zone', in D. R. Rothwell et al. (eds.) *The Oxford Handbook of the Law of the Sea* (2015), 91, 94.

[7]ILC, 'Summary Record of the 335th meeting' (27 April 1956) 9. See further discussion in S. Árnadóttir, *Climate Change and Maritime Boundaries: Legal Consequences of Sea Level Rise* (2021), 44.

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criteria in the case of the outer continental shelf.[8] Similarly, provisional boundaries to the territorial sea can be ascertained by reference to the median line.[9] All of these limits are subject to change until they are permanently established on the basis of bilateral delimitation or recommendations of the Commission on the Limits of the Continental Shelf (CLCS).[10]

The entitlement to a continental shelf exists *ipso facto* and *ab initio*. It can extend beyond 200 nm from baselines in accordance with the natural prolongation of the continental margin and is not dependent on recommendations of the CLCS or any other procedural requirements.[11] UNCLOS Article 77(3) explicitly provides that '[t]he rights of the coastal State over the continental shelf do not depend on occupation, effective or notional, or on any express proclamation'. No such statement is made in regard to the territorial sea but possession of a territorial sea seems to be compulsory[12] and implicit, without any proclamation to that end.[13]

Failure to satisfy procedural obligations does not eradicate inherent maritime entitlements. UNCLOS certainly entails procedural requirements relating to the establishment of maritime limits and boundaries. However, these do not seem to form a prerequisite to the exercise of coastal state jurisdiction over the continental shelf or territorial sea. Churchill has explained that difficulties in acquiring recommendations from the CLCS and establishing final and binding limits to the continental shelf beyond 200 nm should not prevent states from exercising the 'full range of [their] continental shelf rights'.[14] The CLCS is a technical body and its purpose is to ensure that states follow the criteria set forth in UNCLOS. It essentially determines whether the submissions of coastal states regarding their outer continental shelves are 'technically correct'.[15] The legal entitlement to a continental shelf is distinct from the obligation to establish outer continental shelf limits based on CLCS recommendations[16] and the entitlement exists even before the CLCS confirms the legitimacy of the coastal states' assessment. Consequently, states can proceed to exercise their continental shelf rights in areas within and beyond 200 nm from baselines if they believe the area in question falls within their continental shelf as determined by UNCLOS. However, in doing so, states risk encroaching on the international seabed area or the continental shelf of another state.[17] Therefore, it is important that states have strong arguments supporting their claim to a continental shelf before exercising such rights.

The same rationale applies to areas of un-delimited continental shelf and territorial sea entitlements. If states can exercise their entitlements to a continental shelf beyond 200 nm despite the lack of CLCS recommendations, they should also be entitled to exercise their rights to a continental shelf and territorial sea in un-delimited areas because the procedural obligation to delimit boundaries is distinct from the legal entitlement to maritime zones. In fact, the 2007 *Guyana* v. *Suriname* arbitral award indicates that the absence of a permanent boundary should not

[8]UNCLOS Arts. 3, 4, 33(2), 48, 57, 76(1) and (4).

[9]UNCLOS Art. 15.

[10]In the case of continental shelf limits beyond 200 nm see UNCLOS Art. 76(8).

[11]B. M. Magnússon, *The Continental Shelf Beyond 200 Nautical Miles: Delineation, Delimitation and Dispute Settlement* (2015), 247 referring to UNCLOS Art. 77(3) and *Delimitation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal (Bangladesh/Myanmar)* (Judgment), [2012] ITLOS, 51 ILM 844, paras. 408–9. See also T. McDorman, 'The Continental Shelf Regime in the Law of the Sea Convention: A Reflection of the First Thirty Years', (2012) 27 IJMCL 747–8.

[12]Ibid., referring to *Fisheries Case (United Kingdom v. Norway)*, [1951] ICJ Rep. 116, 160 (dissenting opinion).

[13]J. Noyes, *supra* note 6, at 94.

[14]R. Churchill, 'Coastal State Rights on the Outer Continental Shelf', in J. Barrett and R. Barnes (eds.), *Law of the Sea: UNCLOS as a Living Treaty* (2016), 137, 140.

[15]F. M. Armas-Pfirter, 'Submissions on the Outer Limit of the Continental Shelf: Practice to Date and Some Issues of Debate', in D. Vidas (ed.), *Law, Technology and Science for Oceans in Globalisation* (2010), 477, 498.

[16]See A. Oude Elferink, 'Article 76 of the LOSC on the Definition of the Continental Shelf: Questions concerning its Interpretation from a Legal Perspective', (2006) 21 ICJMCL 269, 277–9; G. Eiríksson, 'The Case of Disagreement Between a Coastal State and the Commission on the Limits of the Continental Shelf', in M. H. Nordquist, J. N. Moore and T. Heidar (eds.), *Legal and Scientific Aspects of Continental Shelf Limits* (2004), 258.

[17]R. Churchill, *supra* note 14, at 140.

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unnecessarily restrict the rights of states to exploit inherent entitlements. Here, the tribunal found that Suriname's eviction of an oil rig and ship licensed by Guyana constituted a violation of UNCLOS, the UN Charter, and general international law.[18] Furthermore, the tribunal concluded that the parties had breached their obligations to enter into provisional arrangements under UNCLOS Articles 74(3) and 83(3).[19] Even so, the right to conduct unilateral seismic testing in the disputed area remained[20] and the tribunal did not consider those acts to be inconsistent with the parties' obligations 'not to jeopardise or hamper the reaching of a final agreement'.[21] This indicates that states can exercise their rights to explore and exploit the continental shelf in un-delimited areas as long as those actions do not cause permanent physical changes to the marine environment.[22] Therefore, states can exercise certain continental shelf rights (such as seismic testing) in disputed areas pending boundary agreements.[23] The same may be true of areas subject to overlapping territorial sea claims since those entitlements also exist independently of outer limits or bilateral boundaries and the entitlements should not be unduly restricted by protracted disputes and lack of provisional arrangements.

Anderson has alluded to the fact that states may be entitled to exercise their maritime entitlements in un-delimited areas, explaining that 'the establishment of a boundary brings legal certainty permitting economic activity to start in previously "grey" areas'.[24] Indeed, boundaries bring legal certainty and stability but states can have legitimate claims to un-delimited areas and exercise their rights according to such claims. They may even be required to fulfil certain duties accompanying the possession of a territorial sea (such as the publicizing of dangers to navigation) despite the failure to proclaim a territorial sea or delimit boundaries.[25] The exercise of territorial sea rights and obligations arguably entails reliance upon a provisional boundary.

Exclusive maritime entitlements necessarily call for geographical limits. According to Churchill, the relevant criteria for determining whether a state should exercise its rights and obligations in an un-delimited area might be that of 'significant uncertainty'.[26] The International Tribunal for the Law of the Sea (ITLOS) explained that it 'would have been hesitant' to assume that Bangladesh and Myanmar had continental shelf entitlements beyond 200 nm in the *Bay of Bengal* case if it had 'concluded that there was significant uncertainty as to the existence of a continental margin in the area in question'.[27] Since ITLOS found it had competence to delimit these entitlements due to a lack of 'significant uncertainty' concerning the presence of entitlements in the area, one might assume that coastal states could exercise sovereign rights in that area in the absence of 'significant uncertainty' as to the presence of outer continental shelf entitlements.[28] This same test could be applied to territorial sea entitlements in areas subject to overlapping claims. The obligation to achieve an equitable solution based on international law arguably subjects continental shelf delimitations to significant uncertainties. In contrast, the clarity of UNCLOS Article 15 reduces the uncertainty involved in determining the extent of territorial sea entitlements in un-delimited areas.

[18]Award in the Arbitration Regarding the Delimitation of the Maritime Boundary between Guyana and Suriname *(Guyana v. Suriname)*, (2007) XXX RIAA 1, paras. 445–6.

[19]Ibid., paras. 474, 477, 486.

[20]Ibid., paras. 479–81.

[21]Ibid., para. 481.

[22]See ibid., para. 470; *Aegean Sea Continental Shelf (Greece v. Turkey)* (Interim Protection Order), [1976] ICJ Rep. 3, paras. 30–31.

[23]See *Guyana v. Suriname*, *supra* note 18, paras. 479–81.

[24]D. Anderson, 'Negotiating Maritime Boundary Agreements: A Personal View', in R. Lagoni and D. Vignes (eds.), *Maritime Delimitation* (2006), 121, 122.

[25]J. Noyes, *supra* note 6, at 94 referring to R. Churchill and A. Lowe, *The Law of the Sea, 3rd edition* (1999), 80–1.

[26]See R. Churchill, *supra* note 14, 144, 146–7.

[27]*Bangladesh/Myanmar*, *supra* note 11, para. 448.

[28]R. Churchill, *supra* note 14, at 146–7.

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2.2 Default rule for delimiting overlapping territorial sea entitlements

If coastal states establish no baselines, or baselines that do not meet relevant UNCLOS requirements, recourse is had to normal baselines to determine the extent of their maritime entitlements.[29] Similarly, recourse is had to the median line to identify territorial sea boundaries 'failing agreement between [states] to the contrary'. UNCLOS Article 15 reads as follows:

> Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two States is measured. The above provision does not apply, however, where it is necessary by reason of historic title or other special circumstances to delimit the territorial seas of the two States in a way which is at variance therewith.[30]

This Article establishes a default rule for territorial sea delimitation and explains how states with overlapping entitlements must act, unless they agree otherwise.[31] The lack of agreement to the contrary should lead to the assumption that overlapping territorial sea entitlements are divided by a median line (also referred to as an equidistance line). However, special circumstances and historic title can justify a departure from that line. Here, two readings are possible. This could mean that there is no default territorial sea boundary in cases of historic title or special circumstances or, alternatively, that the default territorial sea boundary is determined with due consideration for special circumstances. The latter reading would codify the equidistance/special circumstances rule of delimitation and be consistent with the *travaux préparatoires*. According to an early draft version of Article 6 of the Convention on the Continental Shelf[32] (before territorial sea delimitation was discussed) the default boundary should be 'determined by application of the principle of equidistance'. This meant that states could depart from the median or equidistance line by reference to special circumstances.[33] Dr. Lando argues that UNCLOS Article 15 does not establish a default boundary because the median line was only intended to form the 'basis for delimitation'[34] and that 'the complexity of a case due to special circumstances could result in the effective permanence of a provisional median-line boundary'.[35] However, the latter reading of UNCLOS Article 15 results in a provisional boundary that is not necessarily a strict median line. This is consistent with the drafting history, which suggests that a departure from a strict median line should not be contingent on an agreement.[36] Consequently, UNCLOS Article 15 makes the median line a *basis for delimitation,* and a well-grounded claim to an area beyond the median line can be justified by reference to special circumstances.

UNCLOS Article 15 designates an applicable method for territorial sea delimitation. Other UNCLOS articles designate no default delimitation methods, and that creates comparatively more uncertainty when identifying entitlements in un-delimited areas beyond the territorial sea. Dr. Lando agrees that the situation is different for exclusive economic zone and continental shelf boundaries compared to territorial sea boundaries because UNCLOS Article 15 explicitly refers

[29]See ILC, 'Summary Record of the 335th meeting' (27 April 1956) 9; *Guyana v. Suriname*, *supra* note 18, para. 396; *Territorial and Maritime Dispute* (*Nicaragua v. Colombia*) (Judgment), [2012] ICJ Rep. 624, para. 38.

[30]UNCLOS Art. 15.

[31]Argument presented by Nicaragua in *Costa Rica v. Nicaragua*, *supra* note 4, para. 92.

[32]Convention on the Continental Shelf (adopted 29 April 1958, entered into force 10 June 1964) 499 UNTS 311.

[33]ILC Yearbook 1953/II, 213 and commentary 216.

[34]M. Lando, *supra* note 2, at 7, referring to Commentary to the Articles concerning the Law of the Sea, in ILC Yearbook 1956/II, 271.

[35]M. Lando, ibid.

[36]See K. Purcell, *Geographical Change and the Law of the Sea* (2019), 106; UNCLOS I Official Records, vol. VI, 95.

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to the median line.[37] The lack of any reference to a particular delimitation method in UNCLOS Article 83 makes it difficult to identify a provisional continental shelf boundary, even if the entitlement to a continental shelf is inherent. Instead, UNCLOS Article 83(3) envisions that undelimited entitlements are subject to provisional arrangements.

UNCLOS Articles 74(3) and 83(3) urge states to establish provisional arrangements pending delimitation agreements. UNCLOS Article 15 has no comparable provision and Dr. Lando assumes that the lack of an explicit reference to provisional arrangements in Article 15 means that no such arrangements are anticipated for the territorial sea.[38] However, this negative inference from UNCLOS Articles 74(3) and 83(3) is unwarranted. The obligation to seek to agree on provisional arrangements pending delimitation agreements is unnecessary in UNCLOS Article 15 which, unlike Articles 74 and 83, provides a default rule for the delimitation of territorial sea boundaries and refers to agreements as a secondary obligation. Article 15 deals with issues of sovereignty and consequently calls for *more* certainty than Articles 74 and 83.[39] In fact, the first draft of what later became Articles 74 and 83 provided that coastal states could not extend their exclusive economic zones or continental shelves beyond the median or equidistance line[40] but this was replaced with the obligation to adopt provisional arrangements because the drafters wanted to avoid references to the equidistance method.[41] According to this, the obligation to adopt provisional arrangements under Articles 74(3) and 83(3) represents a softer approach to that taken in UNCLOS Article 15, which is to establish a default provisional arrangement by application of law.

Some states do rely on provisional boundaries. A significant number of potential maritime boundaries have yet to be delimited[42] and those are arguably subject to provisional boundaries. These can be plotted strictly on the basis of relevant coasts or adjusted by reference to special circumstances but adjusted median lines call for special justification. UNCLOS Article 15 provides the clearest legal basis for provisional boundaries but it seems that some states rely on provisional boundaries even beyond the territorial sea. For example, Italy has declared that, pending agreements, the extent of its entitlement to an ecological protection zone is determined by reference to provisional median lines.[43] Furthermore, the United States maintain that in the absence of an agreed boundary in the Beaufort Sea, it can rely on an equidistance boundary.[44] In fact, the United States seem to have delimited overlapping exclusive economic zone entitlements in the Pacific and with Haiti by de facto equidistance boundaries.[45]

[37]M. Lando, *supra* note 2, at 4.

[38]Ibid., at 5–6.

[39]G. Eiríksson, 'Satya N. Nandan's Role in Drafting the Informal Single Negotiating Text: Aspects of the Preparatory Work for unclos', in M. W. Lodge and M. H. Nordquist (eds.), *Peaceful order in the world's oceans: essays in honor of Satya N. Nandan* (2014), 46.

[40]See UNCLOS III, *Informal Single Negotiating Text, part II*, UN Doc. A/CONF.62/WP.8/Part II, (1975) Arts. 61(3) and 70(3).

[41]G. Eiríksson, *supra* note 39, at 49. See also Introductory Note to the RSNT. The text was later expanded in the Informal Composite Negotiating Text, Rev. 2, UN Doc. A/CONF/62/WP.10/Rev.2 (1980).

[42]D. Anderson, *supra* note 24, at 122; D. Vidas, 'Sea-Level Rise and International Law: At the Convergence of Two Epochs', (2014) 4 *Climate Law* 70, 76; C. Schofield, 'Parting the Waves: Claims to Maritime Jurisdiction and the Division of Ocean Space', (2012) 1 *Penn State Journal of Law and International Affairs* 40, 48.

[43]See DOALOS, 'Table of claims to maritime jurisdiction', UN, 2011, available at www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/table_summary_of_claims.pdf (accessed 3 November 2021), footnote 54; Art. 1(3) of Law 61 on the Establishment of an ecological protection zone beyond the outer limit of the territorial sea (8 February 2006).

[44]See M. Byers, *International Law and the Arctic* (2013), 59; T. McDorman and C. Schofield, 'The Arctic Ocean unscrambled: competing claims and boundary disputes', in K. N. Scott and D. L. VanderZwaag (eds.), *Research Handbook on Polar Law* (2020), 124, 139; United States Department of State, 'Exclusive Economic Zone and Maritime Boundaries', public notice 2237, 23 August 1995, 60 Federal Register 43825-43829.

[45]Á. Ásgeirsdóttir, 'Settling of the maritime boundaries of the United States: Cost of settlement and the benefits of legal certainty', (2016) 73 *Marine Policy* 187, 188.

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3. Judicial precedents for fluctuating boundaries

This section deals with legal precedents for the establishment of fluctuating maritime boundaries. There seems to be no disagreement that states can agree to establish fluctuating maritime boundaries[46] but Dr. Lando doubts that courts and tribunals have legal authority to establish such boundaries.

In his reply, Dr. Lando explains that '[n]othing prevents states from agreeing to establish fluctuating boundaries by treaty'.[47] Moreover, Purcell, a notable proponent for stable maritime limits, has acknowledged that while the location of a maritime boundary is generally fixed, an 'ambulatory maritime boundary may still be established by the terms of a boundary agreement or award'.[48] According to Purcell, 'the law does not prohibit the establishment of an ambulatory maritime boundary but it does indicate that a fluid character should not be presumed'.[49] Purcell submits that it is necessary to analyse the specific circumstances of each case to determine whether a boundary is fixed or fluctuating.[50] The 'objective' or 'declared' intent of the parties or decision-maker may be relevant for this determination.[51] Anderson also addresses the possibility of vague expressions in maritime boundary treaties leading to fluctuating boundaries. He notes that a treaty provision indicating that a maritime boundary is 'the median line' might result in an ambulatory boundary, 'for example if baselines changed over the years as a result of natural forces or human intervention in reclaiming land from the sea'.[52]

Dr. Lando assumes 'international tribunals can delimit fluctuating boundaries, provided that states have agreed to request them to do so'.[53] However, he rejects the suggestion that two cases, *Nicaragua* v. *Honduras* and *Costa Rica* v. *Nicaragua*, establish judicial precedents for the establishment of fluctuating boundaries. Indeed, as explained in Dr. Lando's reply and my original article, the former decision does not establish a fluctuating boundary but leaves a segment of the territorial sea un-delimited.[54] Dr. Lando doubts the Court intended the un-delimited segment to be ambulatory[55] but regardless of the Court's intentions, the application of UNCLOS Article 15 establishes a limit that fluctuates until otherwise agreed. This decision is not a precedent for the establishment of fluctuating boundaries. However, it confirms that courts and tribunals may be unable to delimit boundaries where coastal geography is highly unstable and that can leave states with fluctuating boundary-segments.

The ICJ's decision in the *Costa Rica* v. *Nicaragua* case did establish a fluctuating boundary-segment.[56] Moreover, both states confirmed in oral submissions that they would be satisfied with a mobile segment.[57] Dr. Lando submits that this decision is no 'authority for the delimitation of fluctuating boundaries, but for the narrower proposition that the Court may establish such boundaries when the parties agree to it'.[58] He suggests that, had it not been for the parties' consent, the Court might have started the boundary at a fixed point at sea, like it did in *Nicaragua* v. *Honduras*.[59] However, this is speculative and the Court might also, conceivably, have come to the same conclusion as it did without the parties declared willingness to operate a fluctuating

[46]M. Lando, *supra* note 2, at 4.
[47]Ibid.
[48]K. Purcell, *supra* note 36, at 123.
[49]Ibid., at 121.
[50]Ibid.
[51]Ibid., at 122.
[52]D. Anderson, *supra* note 24, at 133.
[53]M. Lando, *supra* note 2, at 7.
[54]See *Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v. Honduras)* (Judgment), [2007] ICJ Rep. 659, para. 321(4).
[55]M. Lando, *supra* note 2, at 8.
[56]*Costa Rica v. Nicaragua*, *supra* note 4, para. 104.
[57]Ibid., paras. 83–4.
[58]M. Lando, *supra* note 2, at 10.
[59]Ibid.

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boundary-segment. At any rate, the Court clearly found the mobile segment preferable to a fixed boundary (due to coastal instability and erosion) in an area extending 2 nm from the coast.[60]

4. Alternative solutions

Dr. Lando explains the complexities involved with judicial delimitation of fluctuating boundaries. He also discusses, more broadly, how difficult it is to take changing coastal geography into account when delimiting maritime boundaries. This may, according to Dr. Lando, require consideration for future changes to relevant coasts, entailing determination of the relevant timespan, and difficult evidentiary questions.[61] However, coastal instability can be seen as part of the existing circumstances and can consequently affect the choice of basepoints or delimitation methods, or the weight given to individual coastal features.[62] This does not necessarily call for an evaluation of future changes, and evidentiary difficulties can be overcome.[63] Still, as noted by Dr. Lando, it may entail a return to case-specific approaches centred on equitable principles and due regard for all relevant circumstances.[64] Thus, Dr. Lando may be right in concluding that states are in the best position to address the challenges associated with changing coastal geography; that the boundaries themselves may be the root of the problem; and that the 'most realistic solution to take stock of the impact of sea level rise on maritime boundaries seems to be joint development of maritime areas'.[65]

Dr. Lando mentions a number of solutions states can adopt on a case-by-case basis, or generally, instead of maritime boundary delimitation. He suggests that these alternative solutions might entail the abolition of maritime boundaries or certain types of maritime zones.[66] However, solutions that render boundaries or maritime zones obsolete may not sit well with states that have long been preoccupied with territorial acquisition and defined boundaries. Joint development is a more traditional approach which can be useful for managing maritime areas affected by coastal instability and climate change.[67]

Joint development broadly relates to the co-operative exploration or exploitation of particular resources in areas subject to overlapping maritime claims.[68] Johnston and Valencia have identified three categories of diplomatic solutions to maritime boundary disputes: 'Agreement to Designate Area in Dispute', 'Agreement on Some Limited Degree of Cooperation in Designated Area', and 'Arrangement for Integrated Joint Ocean Management'.[69] Co-operative arrangements may involve joint management, environmental protection measures, or decisions not to exploit resources. States have often negotiated the establishment of joint development zones and the adoption of such arrangements has also been proposed as part of formal dispute settlement. For example, the Conciliation Commission delimiting the continental shelf between Iceland and Jan Mayen urged the parties to agree on a co-operative arrangement for the production of hydrocarbon.[70] The Conciliation Commission considered recommending co-operation in relation to other activities

[60]See *Costa Rica v. Nicaragua*, *supra* note 4, para. 86.

[61]M. Lando, *supra* note 2, at 12.

[62]See further discussion on delimitation of entitlements extending from unstable coastlines in S. Árnadóttir, *supra* note 7, at 114–31.

[63]Ibid., at 107–13.

[64]M. Lando, *supra* note 2, at 19.

[65]Ibid., at 20–1.

[66]Ibid., at 20.

[67]The following discussion is based on S. Árnadóttir, *supra* note 7, at 161–5.

[68]D. Johnston and M. Valencia, *Pacific Ocean Boundary Problems: Status and Solutions* (1991), 36.

[69]Ibid., at 24–7.

[70]Report and Recommendations to the Governments of Iceland and Norway of the Conciliation Commission on the Continental Shelf Area between Iceland and Jan Mayen (June 1981), 20 ILM 826, 839, 842.

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and explained that such co-operation could involve, for example, training in the petroleum sector and ongoing access to petroleum at reasonable prices.

Co-operative arrangements can replace or supplement traditional maritime boundaries.[71] It is common practice for states to establish joint development as provisional arrangements under UNCLOS Article 74(3) or 83(3).[72] Agreements establishing joint development generally demarcate geographic areas and define the applicable resources, rules, and jurisdictions, and they usually specify that the 'arrangements shall be without prejudice to the final delimitation', as per UNCLOS Articles 74(3) and 83(3).[73] However, co-operative arrangements can become permanent even if a boundary is settled. One example is the three-year agreement from 1989 between Denmark, Iceland, and Norway concerning the management of capelin stocks.[74] This agreement was extended several times, even though after relevant boundaries were agreed, which means that it is no longer a provisional arrangement in the sense of UNCLOS Article 74(3).[75]

The substantive content of agreements concerning co-operative arrangements can vary significantly. For example, states have established joint fisheries zones and adopted 'clauses concerning future discoveries of transboundary resources'. There are examples of 'joint regime areas' or 'joint development areas' and 'joint commissions' or 'joint authorities' to manage the areas and resources within.[76] States can establish marine protected areas or joint zones for the purposes of managing shared resources. They can also agree not to exploit resources in areas subject to overlapping claims or to co-operate in the protection of particular ecosystems, such as mangrove swamps or salt marshes.

5. Conclusion

This article focused on the legal basis for fluctuating maritime boundaries. It considered whether states have inherent entitlements to a territorial sea and whether UNCLOS Article 15 entails a default rule for the delimitation of overlapping territorial sea entitlements. The article went on to discuss judicial precedents demonstrating the ICJ's willingness to establish fluctuating boundary-
segments. Finally, it explained and exemplified that other solutions might be more feasible in the face of geographic instability. The article concludes that UNCLOS Article 15 does establish a fluctuating provisional boundary and that courts and tribunals do have a legal basis for establishing no boundaries in segments affected by coastal instability, leaving those segments to fluctuate until otherwise agreed. Furthermore, it seems that courts and tribunals can establish fluctuating maritime boundaries but are hesitant to do so without the permission of the parties. Therefore, much depends on the claims brought by disputing parties and their stance on fluctuating boundaries.

States are obligated to establish maritime limits and boundaries in accordance with UNCLOS but what if they fail to meet these obligations? One cannot assume that states possess all maritime zones without express claims to that end. However, there exists an inherent right to the continental shelf and an obligation to have a territorial sea. Therefore, states may be considered to possess those particular maritime zones and to operate accompanying limits and boundaries without any proclamations to that end. If states fail to establish baselines, they are considered to operate

[71]C. Schofield, 'Blurring the Lines? Maritime Joint Development and the Cooperative Management of Ocean Resources', (2009) 7(1) *Issues in Legal Scholarship* 1, at 4–5.

[72]D. Anderson, *supra* note 24, at 138.

[73]C. Schofield, *supra* note 71, at 25.

[74]Agreement between Denmark (on behalf of Greenland), Iceland and Norway on the stock of capelin in the waters between Greenland, Iceland and Jan Mayen (adopted 12 June 1989, entered into force 1 July 1989) 1548 UNTS 165.

[75]The most recent agreement was concluded in 2018, see Framework Arrangement Between Greenland/Denmark, Iceland and Norway on the Conservation and Management of Capelin (adopted and entered into force 21 June 2018), Norwegian Government paper *Meld. St.* 15 (2018–19), 43–4.

[76]DOALOS, *Handbook on the Delimitation of Maritime Boundaries* (2000) 39, para. 180, 314–15.

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normal baselines which may be identified by reference to the low-water line. Similarly, if states fail to delimit a territorial sea boundary, they may be considered to operate an equidistance boundary as described in UNCLOS Article 15. States may also be entitled to exercise their entitlements to a continental shelf in un-delimited areas but the identification of a provisional continental shelf boundary is more complex because, unlike UNCLOS Article 15, Article 83 designates no default method of delimitation and instead urges states to enter into provisional arrangements.

Normal baselines and derived outer limits, including the provisional boundary to the territorial sea, follow the low-water line along relevant coasts and change accordingly. They are consequently subject to significant changes as a result of sea level rise. A large portion of the world's potential boundaries have yet to be delimited and this article concludes that overlapping territorial sea entitlements in such areas are subject to provisional fluctuating boundaries. States can stabilize otherwise fluctuating maritime boundaries through agreements fixing their location. However, it has already proven difficult to fix stable boundaries by reference to highly unstable coasts, which has led to the delimitation of fluctuating boundary-segments. Such difficulties are bound to increase with the growing impacts of climate change. Indeed, fluctuating maritime entitlements seem inevitable because international law currently offers no way of permanently fixing unilateral maritime limits. Fluctuating boundaries are a natural consequence of fluctuating limits but there is an understandable resistance to this instability, partly due to the complexities involved with delimiting and managing fluctuating boundaries. States can avoid fluctuating maritime boundaries by adopting alternative solutions where geographically stable boundaries are unattainable. Such solutions should be encouraged as they can be beneficial to the marine environment. However, they involve a significant departure from the traditional division of maritime zones into territorial units and they can make maritime boundaries obsolete.

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