

Nuclear Submarines under AUKUS and Implications for International Law in the Indo-Pacific

*Natalie Klein**

Table of Contents

I	Introduction	1
II	Law of the Sea and Navigational Rights	4
	A Territorial Sea	4
	B International Straits and Archipelagic Waters	7
III	International Environmental Law	10
IV	International Nuclear Law	12
V	Threats of Use of Force	14
VI	Conclusion	17
	Acknowledgments	18

Abstract

In light of Australia's future acquisition of nuclear-powered submarines under the AUKUS alliance, this article considers the operation of different areas of international law that are relevant for the regulation of these vessels. It examines (1) the law of the sea and its implications for navigational rights in the territorial sea, in international straits and through archipelagic waters; (2) international environmental law in light of the concerns associated with radioactive pollution; (3) consequences for the nuclear-free zone treaties under international nuclear law; (4) prohibited threats of the use of force in violation of Article 2(4) of the UN Charter. Where there are gaps and ambiguities, States in the Indo-Pacific have an opportunity to clarify the application of international law to promote the security and safety of the region in the future.

Keywords

Law of the Sea – Navigation – Nuclear-Free Zones – Nuclear-Powered Vessels – Radiation Pollution – Submarines – Threat of Use of Force

* Professor, Faculty of Law & Justice, UNSW Sydney.

I Introduction

In September 2021, Australia, the United States and the United Kingdom announced a new alliance, which would deepen their security and defense connections by improving interoperability and information sharing, and thereby promote a safe, secure, free and open Indo-Pacific.¹ A cornerstone of this new agreement was Australia's planned acquisition of conventionally-armed, nuclear-powered submarines.² This alliance, known as AUKUS, has long-term implications for the Indo-Pacific region in light of the clear expectation that nuclear-powered submarines will be a vital tool in future security strategies for key players in the region. To date, only six countries have nuclear-powered submarines,³ although Brazil is reported to also have them under development.⁴ The increasing number of nuclear-powered submarines brings into sharper relief a series of questions of international law that warrant closer examination. This article intends to highlight some of the international law issues emerging from the operation of nuclear submarines for the region.

When focusing on the implications for international law with the operation of nuclear-powered submarines, it becomes apparent that the most relevant legal principles either leave a broad scope for interpretation or fall within a gap in current international regulatory regimes. While it seems that military operations have been deliberately placed beyond the scope of international law regulation in many instances,⁵ there may be opportunities for States in the Indo-Pacific to counter this trend. States with concerns about the increasing

1 "Joint Leaders Statement On AUKUS", Mar. 14, 2023, <https://www.pm.gov.au/media/joint-leaders-statement-aukus>; U.S Department of Defense, "AUKUS: The Trilateral Security Partnership Between Australia, U.K. and U.S.", Sept. 15, 2023, <https://www.defense.gov/Spotlights/AUKUS/>.

2 "The AUKUS Nuclear-Powered Submarine Pathway: A Partnership for the Future", *Royal Australian Navy*, Mar. 15, 2023, <https://www.navy.gov.au/aukus-nuclear-powered-submarine-pathway-partnership-future>.

3 China, France, India, Russia, the United Kingdom and the United States all have such submarines. World Nuclear Association, "Nuclear-Powered Ships", Feb. 15, 2023, <https://world-nuclear.org/information-library/non-power-nuclear-applications/transport/nuclear-powered-ships.aspx>.

4 Antonio Ruy de Almeida Silva & Jose Augusto Abreu de Moura, "The Long History of Brazil's Nuclear Submarine Program", Jan 16, 2018, <https://www.wilsoncenter.org/blog-post/the-long-history-brazils-nuclear-submarine-program>.

5 As evident in Article 298(1)(b) and Article 302 during the negotiations of the UN Convention on the Law of the Sea. United Nations Convention on the Law of the Sea, Nov. 16, 1994, 1833 U.N.S.T 397, arts. 298(1)(b) & 302 [hereinafter UNCLoS].

number of nuclear submarines may need to articulate more clearly what rules apply to these warships in their diplomatic practice.⁶

To this end, the article will address four areas of international law. First, the law of the sea and its implications for navigational rights in the territorial sea, in international straits and through archipelagic waters. These laws are especially significant in the Indo-Pacific when considering the important sea lanes of communication through the Malacca Straits and the Singapore Straits, as well as through archipelagic States in the Indian and Pacific Oceans, and in southeast Asia. Second, in light of the concerns associated with radioactive pollution, international environmental law may be at issue with nuclear-powered submarines. An immediate concern when there is any accident involving a nuclear-powered submarine is whether any radioactive materials have been released into the marine environment, or the adjacent airspace.⁷ Third, there are diverse implications for international nuclear law. For the Indo-Pacific, an initial question may be the consequences of the nuclear-free zone treaties.⁸ Finally, there may be a question as to when a nuclear-powered submarine poses a prohibited threat of the use of force in violation of Article 2(4) of the UN Charter.

While these international law questions arguably arose in 1955 when the United States deployed its first nuclear-powered submarine,⁹ the ambiguities or other difficulties in the existing rules were less pressing given the small number of nuclear submarines at issue. The Indo-Pacific now has an opportunity to plan ahead to clarify the application of international law to promote the security and safety of the region.

6 Subsequent State practice may be relevant for treaty interpretation. Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331, art. 31(3)(b). State practice is also a critical factor in the formation of customary international law. Statute of the International Court of Justice, Oct. 24, 1945, 188 U.N.T.S. 137, art. 38(1)(b).

7 For example, in 2021, a US nuclear submarine collided with a seamount (or possibly a sunken oil rig) in the South China Sea, prompting concerns about the possible environmental damage. Mohd Hazmi Mohd Rusli, "The Legality of Passage of Nuclear-Powered Submarines: Are Malaysia and Indonesia in Catch-22", 4 *Moscow J. Int'l L.* 34, 41 (2022).

8 1985 South Pacific Nuclear Free Zone Treaty, Aug 6, 1985, 24 I.L.M. 142 (Treaty of Rarotonga); 1995 Southeast Asia Nuclear Weapons-Free-Zone Treaty, Dec 15, 1995, 35 I.L.M. 635 (Treaty of Bangkok).

9 Submarine Force Library and Museum Association, "History of USS Nautilus", <https://ussnautilus.org/history-of-uss-nautilus> (last visited June 30, 2024).

II Law of the Sea and Navigational Rights

Nuclear-powered submarines have comparable navigational rights to other warships,¹⁰ although some distinctions must be made in light of their submerged operation as well as their nuclear power. This part focuses on the navigational rights in maritime areas subject to State sovereignty: the territorial sea, archipelagic waters and international straits subject to the regime of transit passage. The questions arising for the territorial sea primarily concern whether the passage of nuclear submarines is prejudicial to the peace, good order or security of the coastal State, what counts as “normal mode” for transit or archipelagic sea lane passage (ASLP) and especially what, if any, restrictions a coastal State may be able to impose in relation to that passage. The freedom of navigation is enjoyed by submarines in the exclusive economic zone and on the high seas, subject to certain restrictions,¹¹ but these limits are not addressed in this article.

A Territorial Sea

It is well known that a coastal State exercises sovereignty over its adjacent territorial sea,¹² and that other States have a right of innocent passage through that territorial sea.¹³ Innocent passage entails passage that is not prejudicial to the peace, good order or security of the coastal State, and must be continuous and expeditious.¹⁴

The mere fact of being a nuclear-powered submarine does not immediately result in passage through the territorial sea being non-innocent. Instead, in assessing the innocence of passage, the coastal State must have regard to what activities are being undertaken during that passage;¹⁵ this lesson was clear

10 The long-standing definition of “warships” is presently reflected in art. 29 of UNCLOS. In this article, as the focus is on the AUKUS arrangement, it is assumed that the nuclear-powered submarines (or other references to submarines) relate to State-owned submarines that fall within the definition of warships. Submarines have been used in the context of civil insurgencies, as evident in the tactics of the Tamil Tigers during Sri Lanka’s civil war. Martin N. Murphy, *Contemporary piracy and maritime terrorism: The Threat to International Security* 54 (2013). Privately-owned submarines have also been used for criminal operations, as evident in the ‘narco-subs’ constructed in Colombia and Ecuador. Brian Wilson, “Submersibles and Transnational Criminal Organizations”, 17 *Ocean & Coastal L.J.* 35, 47 (2011).

11 UNCLOS, arts. 58, 87, 300 & 301.

12 *Id.* art. 2.

13 *Id.* art. 17.

14 *Id.* art. 18.

15 As clear from the listing of activities that threaten the peace, good order or security of the coastal State under art. 19(2) of UNCLOS.

from the *Corfu Channel* case.¹⁶ Problematic activities for nuclear-powered submarines during passage in the territorial sea would include research, surveys, intelligence collection and military activities and extend to any other activity “not having a direct bearing on passage.”¹⁷ The latter provision would arguably exclude the option of conducting intelligence gathering about a neighboring coastal State.¹⁸

An additional requirement for submarines (regardless of whether they are nuclear-powered or not) under Article 20 of UNCLOS is that a submarine must surface and show its flag when traveling through the territorial sea of another State.¹⁹ One question emerging in relation to submarines operating in another State’s territorial sea has been whether a failure to surface not only violates Article 20 but also violates the right of innocent passage. Article 19(1) of UNCLOS provides in full that:

Passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State. *Such passage shall take place in conformity with this Convention and with other rules of international law* [emphasis added].

It is clear that the passage of a submarine that complies with the requirement to “navigate on the surface and to show their flag” could still be non-innocent if it engages in any activity that is “prejudicial to the peace, good order or security of the coastal State.” It is less clear whether the passage of a submarine that fails to comply with either or both the requirement to navigate on the surface and to show its flag can be considered non-innocent for this reason alone.

Professor Kraska has argued that the current US position is that submarines may enter submerged into a territorial sea as a form of lawful non-innocent passage.²⁰ He considers that submerged passage of a submarine is not illegal; it is just not a protected right of passage as is the case with innocent passage.²¹ However, a core difficulty with this position is its dissonance with State sovereignty. If the “privilege” of innocent passage is not accepted by a State, the territorial sea is sovereign territory and a foreign warship entering without the consent of the coastal State violates that sovereign territory. This basic

16 *Corfu Channel Case* (U.K. v Alb.), Judgment, 1949 I.C.J. Rep. 4 (Apr. 9).

17 UNCLOS, arts. 19(2)(c), (j) & (l).

18 *Contra* James Kraska, “Putting Your Head in the Tiger’s Mouth: Submarine Espionage in Territorial Waters”, 54 *Col. J. Trans’l L.* 165, 219 (2015).

19 UNCLOS, art. 20.

20 Kraska, *supra* note 18, at 227–28.

21 *Id.* 226.

argument does not consider whether violating Article 20 also violates the right of innocent passage, but rather that Article 20, and the rule enshrined therein, is still a distinct requirement under international law (both UNCLOS and customary international law). Foreign (nuclear-powered) submarines are required to surface in the territorial sea of another State.

In sum, where a submarine undertakes intelligence-gathering submerged in the territorial sea of another State, that submarine is in violation of the right of innocent passage and the obligation to voyage on the surface in another State's territorial sea, as required under Article 20 of UNCLOS. It is also violating the coastal State's sovereignty and obligations of non-interference in the domestic affairs of a State. The latter obligations are those most readily violated through espionage.²²

The prohibition on submerged passage and the right of innocent passage of course applies to all submarines, irrespective of whether they are nuclear-powered or not. It therefore bears asking whether there are additional rules for the navigation of nuclear-powered submarines through another State's territorial sea. Under Article 22(2) of UNCLOS, coastal States may designate sea lanes or traffic separation schemes for nuclear-powered ships. The International Maritime Organization (IMO) plays an important role in the designation of such sea lanes or traffic separation schemes. In addition, under Article 23 of UNCLOS, foreign nuclear-powered ships must carry documents and observe special precautionary measures established by international agreements. These agreements may be developed through the International Atomic Energy Agency (IAEA) and are discussed further in Part III below.

In the event that a foreign nuclear-powered submarine violates any of the requirements for navigating through a State's territorial sea, what may a coastal State do in response? Under UNCLOS, the permissible responses are limited to requests that the submarine (a) "comply with the laws and regulations of the coastal State concerning passage through the territorial sea" and the requirement under UNCLOS to navigate on the surface and show its flag, and (b) leave the State's territorial sea. This response is consistent with Article 30 of UNCLOS, which provides that "[i]f any warship does not comply with the laws and regulations of the coastal State concerning passage through the territorial sea and disregards any request for compliance therewith which is made to it, the coastal State may require it to leave the territorial sea immediately."

22 Dieter Fleck, "Individual and State Responsibility for Intelligence Gathering", 28 *Michigan J. Int'l L.* 687, 692–93 (2007). Even Kraska confirms that this position is the "conventional view" and that espionage in the territory of another State is "illegal per se." Kraska, *supra* note 18, at 181. *But see*, Asif Lubin, "A Liberty to Spy", 85 *Harvard Int'l L.J.* 185, 226–29 (2020).

The coastal State is thus restricted in its ability to respond to non-innocent passage or the breach of its laws or regulations relating to passage as a consequence of the immunity of warships, which are ordinarily exempt from the enforcement jurisdiction of the coastal State. Significantly, however, sovereign immunity only obtains where warships or other government vessels are employed in non-commercial activities. For example, the 2004 submerged passage of a Chinese submarine through Japan's territorial sea prompted environmental concerns given that the submarine was nuclear-powered.²³ In this instance, the immunity enjoyed by the submarine limited the actions that Japan could take against the submarine for the purposes of marine environmental protection,²⁴ and a series of diplomatic demarches between the States ensued.²⁵ The diplomatic protest was the primary response possible given the sovereign immunity enjoyed by the Chinese submarine.

In practice, however, States have used low power depth charges to "signal" to a submerged submarine that it has been identified.²⁶ While higher powered depth charges are weapons used in anti-submarine warfare to destroy submerged submarines, it appears that low power depth charges cannot harm a submarine and have been widely used as a signaling measure.²⁷ This practice further suggests that they should not be considered either a prohibited use of force or a threat of the use of force.²⁸

B *International Straits and Archipelagic Waters*

Within the Indo-Pacific, we also need to account for the passage of nuclear-powered submarines through important shipping lanes, such as the Malacca Strait and Singapore Strait, and through the archipelagic waters of States like the Philippines and Indonesia. These waters are important sea lanes of communication but are subject to the territorial sovereignty of the adjacent coastal States. It is well-accepted that the balance to recognizing a 12 nautical mile

23 For discussions on this topic, see Miyoshi Masahiro, "The Submerged Passage of a Submarine Through the Territorial Sea – The Incident of a Chinese Atomic-Powered Submarine", 2006 *Sing. Y.B. Int'l L.* 24.

24 *Id.* at 249.

25 As discussed in *id.*

26 Said Mahmoudi, "Use of Armed Force Against Suspected Foreign Submarines in the Swedish Internal Waters and Territorial Sea", 33 *Int'l J. Marine & Coastal L.* 585, 587 (2018).

27 Discussion of State practice is set out in Kraska, *supra* note 18, at 168, 193, 197–99; LtCol Brent Stricker, "Rules of Engagement and undersea Incursions: Reacting to Foreign Submarines in Territorial Waters", *CIMSEC*, Feb. 6, 2023, <https://cimsec.org/rules-of-engagement-and-undersea-incursions-reacting-to-foreign-submarines-in-territorial-waters>.

28 See further *infra* Part v.

territorial sea under UNCLOS was the creation of new passage regimes, which would grant greater navigational rights than exist within the territorial sea. Consequently, the regime of transit passage applies in certain international straits and archipelagic sea lane passage (ASLP) applies in archipelagic waters.

For both of these passage regimes, the navigational rights apply in distinct bodies of water and there is always an initial question as to whether the right of transit passage or ASLP applies in a specific area.²⁹ One of the more controversial questions within the Indo-Pacific in this regard is the particular routes of ASLP through different archipelagic States in the region. Indonesia has officially designated three archipelagic sea lanes running north to south, but no sea lane running east to west.³⁰ In this situation, ASLP applies to those routes “normally used for international navigation.”³¹ The Philippines is yet to complete the process of formally designating archipelagic sea lanes through the IMO, but has considered this option domestically.³² In the absence of archipelagic States within the Indo-Pacific proceeding with the official designation of archipelagic sea lanes, these States face the prospect of debate with other States as to what constitutes a route ‘normally used for international navigation’ through which nuclear-powered submarines may voyage submerged. The United States also considers that submarines may be submerged when on approach to or exiting international straits subject to transit passage or when on approach to or exiting archipelagic sea lanes.³³ This perspective may make the most operational sense for submarines. Legally, it is unclear how widely

29 UNCLOS identifies what constitutes an ‘international strait’ for the purposes of transit passage in Article 37, and further stipulates to which straits transit passage does not apply. See, e.g., UNCLOS, arts. 35(c), 36 and 38(1). A State will be lawfully recognized as an archipelagic State, and hence having rights over ‘archipelagic waters’ when that State meets the criteria set out in Articles 46 and 47 of UNCLOS.

30 For discussion, see Robin Warner, “Implementing the Archipelagic Regime in the International Maritime Organization” in *Navigational Rights and Freedoms and the New Law of the Sea* 170 (Donald R Rothwell & Sam Bateman eds., 2000).

31 UNCLOS, art. 53(12).

32 “DFA Urges Forming ‘Archipelagic Sea Lanes’ within Philippine Waters”, *ABS-CBN News*, Mar. 19, 2021, <https://news.abs-cbn.com/news/03/19/21/dfa-urges-forming-archipelagic-sea-lanes-within-philippine-waters>; “Philippine Lawmakers Want to Designate Inter-Island Sea Lanes amid Chinese Incursions”, *Radio Free Asia*, Oct. 28, 2022, <https://www.rfa.org/english/news/southchinasea/sealanes-10282022175504.html>; Moira G. Gallaga, “Designating Archipelagic Sea Lanes”, *Inquirer.net*, Nov. 10, 2022, <https://opinion.inquirer.net/158602/designating-archipelagic-sea-lanes>.

33 US Navy, Marine Corps & Coast Guard, *Commander’s Handbook on the Law of Naval Operations*, at 2–9 (Mar. 2022), available at https://stjcecmcsdusgva001.blob.core.usgovcloudapi.net/public/documents/NWP_1-14M.pdf (last visited June 30, 2024).

accepted this view may be when contrasted against the clear requirement for submarines to surface when in the territorial sea.

If the regime of transit passage or ASLP applies, the rights of navigation are for vessels operating in the normal mode solely for the purpose of continuous, expeditious and unobstructed transit.³⁴ There appears to be unanimity in the view that “normal mode” means a submarine may travel submerged through international straits subject to the regime of transit passage and also submerged when exercising the right of ASLP.³⁵ Unlike the restrictions on the right of innocent passage, the only other requirements for transit passage and ASLP are that the passage does not constitute an unlawful threat or use of force.³⁶

For transit passage in international straits and ASLP, will there be instances that a coastal State can prevent or regulate the passage of a nuclear submarine? During times of peace, Article 44 of UNCLOS provides that: “States ... shall not hamper [ASLP or transit passage] and shall give appropriate publicity to any danger to navigation or overflight within or over the [strait or ASL] of which they have knowledge. There shall be no suspension of [transit passage or ASLP]”. Coastal States may adopt laws and regulations in relation to passage through these straits or archipelagic waters, but “such laws and regulations shall not discriminate in form or in fact among foreign ships or in their application have the practical effect of denying, hampering or impairing the right of [transit or ASLP].”³⁷ The options for a coastal State are thus few in relation to limiting the right of transit passage or ASLP. In terms of possible responses that may be permissible for the coastal State in the event a nuclear-powered submarine violates the right of transit passage or ASLP, the coastal State is again limited by the sovereign immunity enjoyed by that submarine.³⁸

The importance of navigational rights through international straits and archipelagic waters is reinforced by the view that these rights continue to apply during times of armed conflict. Notably, in accordance with the San Remo Manual on the Law of Naval Warfare, belligerents are allowed to take defensive measures during passage, but not conduct offensive operations.³⁹

34 UNCLOS, arts. 38 and 39.

35 Bing Bing Jia, *The Regime of Straits in International Law* 151 (1998) (and sources cited therein).

36 UNCLOS, art. 39(1)(c).

37 *Id.* art. 42(2).

38 The sovereign immunity of warships remains applicable by virtue of Article 30 and the provision in Article 34(2), which subjects the coastal State's sovereignty to ‘other rules of international law’.

39 “San Remo Manual on International Law Applicable to Armed Conflicts at Sea”, para. 30 (June 12, 1994), <https://ihl-databases.icrc.org/en/ihl-treaties/san-remo-manual-1994>.

This stated view in the San Remo Manual is yet to be properly tested in State practice, however. If archipelagic or strait States have a different view, it would be advisable to articulate that view prior to any armed conflict.

III International Environmental Law

The increased production of nuclear-powered submarines could further give rise to environmental concerns due to the risk of accidents. A study from 2019 observed, “[o]f the total of 41 accidents recorded in 36 [nuclear] submarines, 12 related to nuclear reactors, resulting in the release of radioactivity within the vessel as well as in the sea, and radiation poisoning as well as the death of the crews in some cases”.⁴⁰ The IAEA has reported on the release of radioactive materials into the water column and the air consequent to these accidents.⁴¹ There is a suite of principles under both treaty law and customary international law that seek to protect the marine environment, including from the risks arising from radioactive materials. Yet exceptions to these rules are frequently available in relation to warships.

In the first instance, UNCLOS, which provides an overarching legal framework in international marine environmental law,⁴² affirms the sovereign immunity of warships.⁴³ However, beyond providing that warships will not be subject to any enforcement jurisdiction of another State, UNCLOS goes further and renders duties associated with the protection and preservation of the marine environment to be inapplicable. As such, it appears that prescriptive jurisdiction may not be asserted either, except under the terms of UNCLOS. Article 236 provides in full:

The provisions of this Convention regarding the protection and preservation of the marine environment do not apply to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used,

40 Zia Mian, M.V. Ramana & A.H. Nayyara, “Nuclear Submarines in South Asia: New Risks and Dangers” 2*J. Peace & Nuclear Disarmament* 184, 189 (2019). See further *id.* Appendix 1. Table of Nuclear Submarine Accidents.

41 International Atomic Energy Agency, *Inventory of Accidents and Losses at Sea Involving Radioactive Material* (Sept. 2001), available at https://www-pub.iaea.org/MTCD/Publications/PDF/te_1242_prn.pdf (last visited June 30, 2024).

42 Yoshifumi Tanaka, “Basic Principles of International Marine Environmental Law”, in *Research Handbook on International Marine Environmental Law* 81 (Rosemary Rayfuse, Aline Jaeckel & Natalie Klein eds., 2d ed. 2023).

43 UNCLOS, art. 36.

for the time being, only on government non-commercial service. However, each State shall ensure, by the adoption of appropriate measures *not impairing operations or operational capabilities* of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, *so far as is reasonable and practicable*, with this Convention. [Emphasis added]

Beyond this rather malleable standard, a close examination of the relevant marine environmental protection treaties adopted under the auspices of the International Maritime Organization, reveals that few of those obligations apply to warships or other vessels subject to sovereign immunity. For example, the IMO's Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks Onboard Ships specifies how certain nuclear materials should be carried by sea, but excludes warships, naval auxiliaries and other sovereign-immune vessels from its scope.⁴⁴

The IAEA has adopted a range of treaties to address safety and security concerns associated with nuclear materials. Yet, similarly to the treaties on marine environmental protection, the international laws relating to nuclear safety generally exempt military or defense uses of nuclear substances. For example, Article 3(3) of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management reads:

This Convention shall not apply to the safety of management of spent fuel or radioactive waste *within military or defence programmes*, unless declared as spent fuel or radioactive waste for the purposes of this Convention by the Contracting Party. However, this Convention shall apply to the safety of management of spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes.⁴⁵

Nuclear-powered submarines may be regulated in relation to treaties dealing with notification of and assistance with nuclear accidents. For instance, the Convention on Early Notification of a Nuclear Accident has a scope of

44 International Maritime Organization, Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks Onboard Ships (INF Code), 1.2.1 (referring to International Convention for the Safety of Life at Sea, Nov. 1, 1974, 1194 U.N.T.S. 278, ch. VII, reg 15.2, which excludes the application of the Code to warships).

45 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, May 9, 1997, 2153 U.N.T.S. 303, art. 3(3) (emphasis added).

application that includes “the transport and storage of nuclear fuels,” as well as “any nuclear reactor wherever located”, and is concerned with accidents that may cause transboundary harm.⁴⁶ In the event of a nuclear accident, there are notification and information obligations that are owed to States that may be physically affected.⁴⁷ The obligations associated with notice and information appear to be the only requirements that apply to nuclear-powered submarines. As such, States may wish to consider if there are instead other principles of international environmental law that should be rendered applicable to nuclear-powered submarines.

IV International Nuclear Law

The regulation of nuclear material is extensive under international law,⁴⁸ ranging across liability in relation to nuclear production facilities⁴⁹ to nuclear terrorism⁵⁰ and nuclear weapon bans.⁵¹ Nuclear non-proliferation has been a key concern for the Indo-Pacific. With the advent of AUKUS, Australia has had to enter into an agreement with the IAEA to ensure it maintains its non-proliferation commitments.⁵²

For present purposes, I will focus particularly on the nuclear-free zones that have been declared in the Indo-Pacific under the Treaty of Bangkok and the

46 Convention on Early Notification of a Nuclear Accident, Sept 26, 1986, 1439 U.N.T.S. 275, art. 1.

47 *Id.* art. 2.

48 For discussion, see, e.g., *Nuclear Law: The Global Debate* (International Atomic Energy Agency, 2022); Helen Cook, *The Law of Nuclear Energy* (3rd ed, 2022); Christopher Hobbs, *The Oxford Handbook of Nuclear Security* (Sarah Tzinieris and Sukesh K. Aghara eds., 2023).

49 See, e.g., Vienna Convention on Civil Liability for Nuclear Damage, May 21, 1963, 1063 U.N.T.S. 266; Paris Convention on Third Party Liability in the Field of Nuclear Energy, July 29, 1960, 956 U.N.T.S. 251; Brussels Convention Supplementary to the Convention on Third Party Liability in the Field of Nuclear Energy, Jan 31, 1963, 1041 U.N.T.S. 358 (and protocols subsequently amending these conventions).

50 International Convention for the Suppression of Acts of Nuclear Terrorism, Apr. 13, 2005, 2445 U.N.T.S. 89.

51 Treaty on the Prohibition of Nuclear Weapons, July 7, 2017, 3379 U.N.T.S.

52 For discussion of the IAEA requirements, see IAEA Board of Governors, “Naval nuclear propulsion: Australia”, GOV/INF/2023/10, May 31, 2023, <https://www.iaea.org/sites/default/files/23/06/govinf2023-10.pdf>; “International Atomic Energy Agency endorses AUKUS with key reservations”, *Australian Industry & Defence Network*, Mar. 3, 2023, 17, <https://aidn.org.au/international-atomic-energy-agency-endorses-aukus-with-key-reservations/>; ICAN Australia, *Troubled Waters: Nuclear Submarines, AUKUS and the NPT*, July 2022, <https://icanw.org.au/wp-content/uploads/Troubled-Waters-nuclear-submarines-AUKUS-NPT-july-2022-final.pdf>.

Treaty of Rarotonga⁵³ and possible legal rights and obligations for both States and non-State parties in relation to nuclear-powered submarines. Similar nuclear weapon free zones have been created under regional treaties for Latin America and the Caribbean,⁵⁴ as well as Africa,⁵⁵ and Central Asia.⁵⁶ Within each of these zones, there are comprehensive prohibitions relating to nuclear explosive devices. There is also an environmental concern with these treaties as well. For example, the Treaty of Rarotonga has the aim of keeping the region “free of environmental pollution by radioactive wastes and other radioactive matter.”⁵⁷

States party to these treaties are to prevent the stationing of nuclear explosive devices in their territory. Stationing is defined in the Treaty of Rarotonga as “emplantation, emplacement, transportation on land or inland waters, stockpiling, storage, installation and deployment.”⁵⁸ The definition has been criticized for its ambiguity, as it may seemingly allow for port visits by nuclear-powered and nuclear-armed vessels.⁵⁹

Further to these treaties, each State typically retains the right to decide on the passage or visit of foreign ships beyond the navigational rights enjoyed by these ships for innocent passage, transit passage or archipelagic sea lanes passage.⁶⁰ These restrictions only apply to the EEZ and continental shelves of those States that are party to the Treaty of Bangkok,⁶¹ whereas no comparable term is included in the Treaty of Rarotonga. In any event, the Treaty of Bangkok further seeks to preserve navigational rights set out in UNCLOS for other States,⁶² while denying themselves the right to transport nuclear weapons within the designated zone.⁶³

53 See *supra* note 8.

54 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, Feb. 14, 1967, 6 I.L.M. 521 (Tlatelolco Treaty).

55 1996 Treaty on the Nuclear-Weapon-Free Zone in Africa, Apr 1, 1996, 35 I.L.M. 698 (Pelindaba Treaty).

56 Central Asian Nuclear-Weapon-Free Zone Treaty, Sept 8, 2006, 2970 U.N.T.S. (Semipalatinsk Treaty).

57 Treaty of Rarotonga, preamble.

58 Treaty of Rarotonga, art. 1(d). See also Treaty of Bangkok, art. 7; Semipalatinsk Treaty, art. 4.

59 Daniel Hurst, “A four-decade-old Pacific treaty was meant to preserve the ‘peaceful region’. Now experts say it’s being exploited”, *Guardian*, Sat. 18, 2023, <https://www.theguardian.com/world/2023/nov/19/a-40-year-old-pacific-treaty-was-meant-to-maintain-the-peaceful-region-now-experts-say-its-being-exploited>.

60 Treaty of Rarotonga, art. 5.

61 Treaty of Bangkok, art. 2(1).

62 “Nothing in this Treaty shall prejudice the rights or the exercise of these rights by any State under the provisions of the United Nations Convention on the Law of the Sea of 1982, in particular with regard to freedom of the high seas, rights of innocent passage, archipelagic sea lanes passage or transit passage of ships and aircraft, and consistent with the Charter of the United Nations.” Treaty of Bangkok, art. 2(2).

63 Treaty of Bangkok, art. 3(1)(b).

In relation to AUKUS, it is important to note that these nuclear-free-zone treaties would be primarily targeted at nuclear-armed submarines, rather than nuclear-powered submarines given that the treaties are directed to “nuclear explosive devices,” including when unassembled, and do not cover all nuclear materials more broadly. For example, the Treaty of Rarotonga excludes from the definition of nuclear explosive devices “the means of transport or delivery of such a weapon or device if separable from and not an indivisible part of it.”⁶⁴ These treaties are directed at the purpose of nuclear non-proliferation and nuclear disarmament—as evident in the preambles to the treaties—rather than concerns with nuclear-powered submarines.

V Threats of Use of Force

Finally, there may be a question as to when a nuclear submarine poses a threat of the use of force in violation of Article 2(4) of the UN Charter. Whether there is a violation of Article 2(4) is a question for the law of war (or law on the use of force, *jus ad bellum*) but it is also relevant in relation to navigational rights under the law of the sea.

With regards to the law of the sea, when we consider the right of innocent passage, a threat or use of force will place a vessel in violation of that right.⁶⁵ Further, one of the few requirements on the rights of transit passage and ASLP is that the passage does not constitute an unlawful threat or use of force.⁶⁶ There has been some debate about the legality of military activities in another State’s EEZ.⁶⁷ The majority view is that military activities in times of peace fall within the freedom of navigation and other uses related to that freedom. Another view, which has been included in some coastal State’s legislation, is that all military activities are prohibited as inconsistent with the sovereign rights and jurisdiction enjoyed by coastal States in this *sui generis* maritime zone. Even with the majority view, it should be noted that the exercise of navigational rights within another State’s EEZ still has limitations. One of those limitations is the prohibition on the threat or use of force. None of these limitations within the law of the sea is surprising when we recall Article 301 of UNCLOS replicates the UN Charter prohibition set out in Article 2(4).

64 Treaty of Rarotonga, art. 1(c); Tlatelolco Treaty, art. 5. (“An instrument that may be used for the transport or propulsion of the device is not included in this definition if it is separable from the device and not an indivisible part thereof.”)

65 UNCLOS, art. 19(2)(a).

66 *Id.* art. 39(1)(b).

67 For a discussion on the debate, see Natalie Klein, *Maritime Security and the Law of the Sea* 46–53 (2011).

Given the importance of this requirement, the key question emerging in relation to nuclear-powered submarines is when their use will constitute an unlawful threat of the use of force. There has been much less focus in the literature, and in the jurisprudence, on what constitutes an unlawful *threat* of the use of force, as opposed to an unlawful *use* of force. Professor Ian Brownlie used the following definition in 1963:

A threat of force consists in an express or implied promise by a government of a resort to force conditional on non-acceptance of certain demands of that government. If the promise is to resort to force in conditions in which no justification for the use of force exists, the threat itself is illegal.⁶⁸

This definition largely still holds good to this day.⁶⁹ In determining if a threat of the use of force is unlawful, a first concern is whether the actual use of force would be unlawful in the same circumstances. This question arises because of the close textual linkage in the prohibition of a “threat or use of force” and the view of the International Court of Justice from the *Nuclear Weapons Advisory Opinion*.⁷⁰ In that *Advisory Opinion*, the Court opined that “the declared readiness of a State to use force must be a use of force that is in conformity with the Charter.”⁷¹

Second, a threat of force will typically involve coercion,⁷² as a demand is being placed on the threatened government. The form of coercion may be communicated through the actions of a State as well as through official statements. What is being demanded and what the consequence is if the demand is not met requires clarity in the communications between States. For present purposes, it is the use of submarines in certain maritime areas—such as close proximity to naval bases or other military infrastructure—or in certain ways—potentially involving a form of electronic warfare—that may communicate the seriousness of a State’s intentions in wanting its demands met. What amount of signaling is needed remains obscure, but at least reduces the instances where actions could be cast as unlawful threats of force. Without the signaled intent to use force, the actions in question may thus instead be cast as a lawful warning.⁷³

68 Ian Brownlie, *International Law and the Use of Force by States* 364 (1963).

69 Nicholas Tsagourias, *The Prohibition of Threats of Force’ in Research Handbook on International Conflict and Security Law: Jus Ad Bellum, Just in Bello and Jus Post Bellum*, 67, 76 (Nigel D White and Christian Henderson eds., 2013) (describing it as the “classic definition”).

70 Legality of the Threat or Use of Nuclear Weapons, *Advisory Opinion*, 1996, I.C.J. Rep. 226 (July 8).

71 *Id.* para. 47.

72 Nikolas Stürchler, *The Threat of Force in International Law* 57 (2007) (referring to coercion as the “defining ingredient”).

73 Marco Roscini, “Threats of Armed Force and Contemporary International Law”, 54 *Neth. Int’l L. Rev.* 229, 235 (2007) (referring to the “threatener’s will”).

Third, an unlawful threat of force is associated with a sense of imminence to the use of force.⁷⁴ This third element may also be linked to the idea of the credibility of the threat.⁷⁵ A State's lack of capability or proximity in relation to threatening force may render the possible use of force less imminent or reduce the likelihood that force will result. A State with powerful weapons that would reach the threatened State may present a more credible or more imminent use of force; the hostile intent in the military demonstrations may thus be more apparent.⁷⁶

Much may depend on the circumstances in every instance. Some commentators suggest that there is high tolerance for threats of force: threats of use of force "play the role of a ritualized substitute for the use of force and, as such, may help to speed up the peaceful settlement of disputes."⁷⁷ This tolerance for threats of force may indicate that not every threat in the diplomatic relations between States necessarily entails a violation of the prohibition of threats of force.⁷⁸

It could be argued that covert, submerged passage through the territorial sea to gather information about coastal defenses and to test electronics or locate vulnerable positions as a precursor to the use of force in the future should be condemned as an unlawful threat to the coastal State concerned. The suggestion in this instance is that the mere fact of being submerged and in proximity to the coast is enough to demonstrate a prohibited threat of force. Yet without any element of coercion, immediacy, or signaled intention, on the part of the State sending the submerged nuclear-powered submarine into another State's territorial sea, it is difficult to establish that there is a violation of the international prohibition on the threat of force.

There have been numerous allegations of unlawful submerged passage in the territorial sea of coastal States. States claiming that Russian (or previously Soviet) submarines have unlawfully entered their territorial sea include Norway, Finland, Sweden, Italy, and Chile.⁷⁹ These intrusions appear to have more typically been considered as acts of espionage rather than an unlawful threat of the use of force. Similarly, the incursion of US submarines into the waters of Russia, China, Canada, and Cuba have prompted protests on occasions.⁸⁰ China

74 Stürchler, *supra* note 72, at 55–57 (concluding that imminence of actual force may be an indicator of rather than a precondition for establishing an unlawful threat of force). See also *Id.* 254.

75 Tsagourias, *supra* note 69, at 77; Romana Sadurska, "Threats of Force", 82 *Am. J. Int'l L.* 239, 245 (1988).

76 As Stürchler suggests is critical. See Stürchler, *supra* note 72, at 273.

77 Oliver Dörr & Albrecht Randelzhofer, "Article 2(4)", in *The Charter of the United Nations: A Commentary*, 217, para. 43 (Bruno Simma, et al, ed., 2012).

78 Francis Grimal, *Threats of Force: International Law and Strategy* 48 (2012); Sadurska, *supra* note 75, at 239–40.

79 Kraska, *supra* note 18, at 193–201.

80 *Id.* at 201–07.

has labeled these incidents as “provocations”⁸¹ and Russia has observed the violation of its territorial sea.⁸² Other international laws are clearly violated, including the requirement that submarines only traverse the territorial sea on the surface,⁸³ as well as the right of innocent passage.⁸⁴ However, it is less likely that a coastal State could claim that there has been an unlawful threat of force when foreign submarines are submerged in its territorial sea.

Submarine operations in the EEZ or on the high seas are permissible as within the freedom of navigation and it is unlikely that their use would violate the prohibition on the threat of force. It would only be situations where submarines are being deployed, most likely in conjunction with other naval vessels, as if an armed attack was in preparation and imminent, and accompanied by communications from the State concerned against another State (signalling intention to use force if demands are not met) that it may be plausible to contemplate a violation of the prohibition on the threat of use of force. Certainly it could not be suggested that Australia’s announced intention to acquire nuclear-powered submarines could be viewed as an unlawful threat of the use of force.

VI Conclusion

When contemplating the international laws relating to submarines, it is quite remarkable how well submarines have evaded specific regulation. The only explicit mention of submarines in UNCLOS is in relation to the requirement that submarines surface and show their flag when traversing the territorial sea of another State. We otherwise need to contemplate how existing rules, such as allowing “normal mode” in transit passage, showing due regard in navigation and in collision avoidance, or what counts as “stationing,” apply in relation to the operation of nuclear-powered submarines. In some instances, it is the characterization of submarines rather than their form of power that matters more; in other instances, the risk of radioactive contamination highlights the operation of certain rules. The declaration of the AUKUS alliance and Australia’s future procurement of nuclear-powered submarines has brought into sharper relief how international law may be brought to bear in State decision-making and State practice in relation to the lawful operation of submarines.

While submarines are increasingly critical for any State’s naval forces, we should not lose sight of the ramifications of their use across diverse maritime

81 *Id.* at 203.

82 *Id.* at 204, 206.

83 UNCLOS, art. 20.

84 *See id.* Part II.B.

activities. The recent implosion of the *Titan* submersible in the Atlantic⁸⁵ has highlighted their use for leisure and scientific purposes; and the increasing automation of vessels extends to underwater autonomous vehicles.⁸⁶ We should increasingly expect that the infamous narco-sub, which have been seized in Colombia and Ecuador,⁸⁷ will be automated and deployed for criminal smuggling of drugs, weapons and other illicit goods.⁸⁸ The interaction of military submarines with commercial shipping also needs to be borne in mind, as the navigational safety of commercial shipping is most at risk when submarines rise to the surface without sufficient regard to surface traffic.⁸⁹

With the future addition of nuclear-powered submarines flying under the Australian flag, there is undoubtedly a diversity of strategic considerations that will be at the forefront of policymaking. Among those decisions should also be the preferred legal positions in relation to seeming gaps or ambiguities in existing international law. Too often submarines have been overlooked or excluded in different areas of international law because of their military utility, especially in the modern era. Submarines are different to other ships in many ways, and States need to articulate their position under international law clearly and consistently so as to minimize future international disputes or conflict.

Acknowledgments

Thanks to DoHyeon Bae for editorial assistance in the finalization of this article. This article was presented as the Hungdah Chiu Lecture at the 2023 ILA-ASIL Asia-Pacific Research Forum: Indo-Pacific Strategies and International Law. It draws on material to be published in Natalie Klein, Kate Purcell and Jack McNally, *Submarines in International Law* (CUP, forthcoming in 2025).

85 “Titan Sub Implosion: What We Know about Catastrophic Event”, *BBC*, June 26, 2023, <https://www.bbc.com/news/world-us-canada-65934887>.

86 See R McLaughlin, “Unmanned Naval Vehicles at Sea: USVs, UUVs and the Adequacy of the Law”, 21 *J. L. Information & Sci.* 100 (2011).

87 Brian Wilson, “Submersibles and Transnational Criminal Organizations”, 17 *Ocean & Coastal L.J.* 35, 47 (2011); Joel Coito, “Maritime Autonomous Surface Ships: New Possibilities—and Challenges—in Ocean Law and Policy”, 97 *Int’l L. Stud.* 259, 285–87 (2021).

88 See Rob McLaughlin & Natalie Klein, “Maritime Autonomous Vessels and Drug Trafficking by Sea: Some Legal Issues”, 36 *Int’l J. Marine & Coastal L.* 389 (2021).

89 John Paul Jones, “Marine Collisions in the Vertical: Submarines Surfacing”, *Military Law News* 1 (2002), University of Richmond, UR Scholarship Repository. Most apparent was the *USS Greeneville*, a nuclear submarine, that collided with the *Ehime Maru* in waters off Hawai’i in 2001, causing nine deaths on the Japanese fishing and training vessel. US National Transportation Safety Board, “Marine Accident Brief”, NTSB/MAB-05/01, Sept. 29, 2005, <https://www.nts.gov/investigations/AccidentReports/Reports/MAB0501.pdf>.