Marine Autonomous Ships in the Arctic: Prospects and Challenges

Sabrina Hasan[*]

Due to climate change and global warming, the Arctic Ocean is changing and opening doors for commercial shipping. The geographic nature and ecosystem of the Arctic Ocean make it different from the rest of the oceans and seas. Falling within the category of ice-covered area, *article 234* provides certain rights to coastal states concerning ice-covered areas within the limits of exclusive economic zone and this article has gained much attention to be tested further as a result of the changing Arctic?.[1] Meanwhile, the International Code for Ships Operating in Polar Waters (Polar Code)[2] has entered into force and the prospect of the Marine Autonomous Ship (MAS) in the Arctic is also apparent. Starting with the question to identify MAS as a "ship" within existing legal frameworks to the need for amendments of IMO (International Maritime Organization) instruments, MAS operation is already under consideration of the international maritime community to find out the answers to such questions. IMO has already completed the regulation scoping exercise for the use of Marine Autonomous Surface Ships.[3] However, little attention has been given to the MAS operation in the Arctic exclusively from the legal perspective to exercise states jurisdiction. Seeing the interest of the international maritime community in accepting MAS operation, the question arises whether the prospect of MAS in the Arctic Ocean needs a revision of *article 234* and any other regulatory framework for exercising jurisdiction over MAS within and beyond areas of national jurisdiction.

Unlike the Antarctic, the Arctic ocean is encircled by five coastal states (Canada, Denmark / Greenland, Norway / Svalbard, Russia and the United States) who have claimed exclusive economic zones (EEZ) in the Arctic Ocean. Article 234 of UNCLOS provides states with a special right to adopt and enforce

[*] PhD Candidate, South China Sea Institute, Xiamen University

[1] Chircop, Aldo E., Floris Goerlandt, Claudio Aporta, and Ronald Pelot. Governance of Arctic Shipping: Rethinking Risk, Human Impacts and Regulation. Cham, Switzerland: Springer, 2020.

[2] MEPC 68/21/Add.1 Annex 10. The International Code for Ships Operating in Polar Waters (Polar Code), www.imo.org/en/MediaCentre/HotTopics/polar /Documents/POLAR%20CODE%20TEXT%20AS%20ADOPTED.pdf.

[3] MSC.1/Circ.1638, Outcome of the Regulatory Scoping Exercise for the Use of Marine Autonomous Surface Ships (MASS), 3 June 2021, https://wwwcdn.imo.org/localresources/en/MediaCentre/PressBriefings/Documents/MSC.1-Circ.1638%20-%20Outcome%20Of%20The%20Regulatory%20Scoping%20ExerciseFor%20The%20Use%20Of%20Maritime%20Autonomous%20Surface%20Ships...%20(Secretariat).pdf

environmental laws and regulations in ice-covered areas within their EEZs that are more stringent than general international standards. Four of the five Arctic coastal states have ratified the UNCLOS. Though the United States has not signed the Convention but generally accepts that the Convention reflects customary international law.[4] Thus, all five coastal states are entitled to exercise rights under article 234 of UNCLOS within the EEZ of the Arctic Ocean. At the present, the central Arctic Ocean, which has a significant area of high seas, appears to be inaccessible to ships and can only be reached by passing through the five Arctic States' EEZs or territorial seas via the Northwest and Northeast Passages.[5] However, considering the Climate reports, during summer in the next decades the whole Arctic may become ice-free,[6] and open for shipping through the "Transpolar Sea Route"[7]. Current scientific models predict an ice-free Central Arctic Ocean in summer by mid-century and possibly sooner. This could soon open up a direct shipping route across the North Pole, linking markets in Asia, North America and Europe.[8] The Transpolar Passage, like the Northern Sea Route and the Northwest Passage, could be appealing in a world where timing makes the difference between profit and loss. The Northeast Passage is two to three weeks faster than the Suez Canal for trips between Europe and Asia. The Transpolar Passage could save two days if it crossed the Arctic straight through.[9] Meanwhile, the prospect of autonomous shipping in the Arctic seems to receive wider acceptance from the technologists considering the safety risks or intermediate risks of manned ships to humans.[10] As such Aker Arctic, the

[4] See President Regan, Statement—U.S. Oceans Policy, 10 March 1983, 22 I.L.M. 464–465.

[5] Hartmann, Jacques. "Regulating Shipping in the Arctic Ocean: An Analysis of State Practice." Ocean Development & International Law 49, no. 3 (2018): 276–99. https://doi.org/10.1080/00908320.2018.1479352.

[6] See IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. PΘan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekτi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

[7] Bennett, Mia M., Scott R. Stephenson, Kang Yang, Michael T. Bravo, and Bert De Jonghe. "The Opening of the Transpolar Sea Route: Logistical, Geopolitical, Environmental, and Socioeconomic Impacts." Marine Policy 121 (2020): 104178. https://doi.org/10.1016/j.marpol.2020.104178.

[8] Bennett, Mia. "The Arctic Shipping Route No One's Talking About." CRYOPOLITICS, April 23, 2019. https://www.cryopolitics.com/2019/04/23/transpolar-passage/.

[9] Melia, N., K. Haines, and E. Hawkins. "Sea Ice Decline and 21st Century Trans-Arctic Shipping Routes." Geophysical Research Letters 43, no. 18 (2016): 9720–28. https://doi.org/10.1002/2016gl069315.

[10] Bergstrom, Martin. Autonomous in the Arctic – fortune or folly? The Pace Technology, Page 58, https://search.abb.com/library/Download.aspx?DocumentID=9AKK107045A7567&LanguageCode=en&DocumentPartId=&Action=Launch

model autonomous ship is under in-housing trial for development.[11]

The United Nations Conventions on the Law of the Sea (UNCLOS)[12] permits flag states to enjoy the right of navigation in the high seas having exclusive jurisdiction.[13] The United Nations Convention on the Law of the Sea (UNCLOS) allows flag states to have exclusive jurisdiction over the high seas and enjoy the right of navigation. The UNCLOS contains rules that govern navigation in different zones, including "innocent passage" through territorial seas (UNCLOS Articles 17-26 and 52), "right of transit passage" through international straits (UNCLOS Article 38), the "right of passage through archipelagic sea lanes" in archipelagic waters (UNCLOS Article 53), in the EEZ (UNCLOS Article 58(1)) and "freedom of navigation" on the high seas (UNCLOS Article 87(1)(a)). The level of state control over foreign-flagged vessels navigating in the various maritime zones is what distinguishes the various types of navigational rights.[14]

Initiating to magnify the laws to regulate MAS under UNCLOS, the task would be shuttered by the different provisions by their wordings, which do not constitute any literal meaning that could comply with the specs of MAS to consider them regulatable under the UNCLOS. Beginning with the territorial sea, where ships of all states enjoy the right of the innocent passage under Article 17 of UNCLOS, all foreign ships enjoy the right of innocent passage, and the meaning of innocent passage has been further expanded in Article 19 concerning ships activities to be counted as non-innocent. It is now crucial to determine whether Article 19 requires the inclusion of additional activities that can be counted as non-innocent activities to ensure the peace, good order or security of coastal states and whether Article 21, which mentions the right of coastal states to make laws and regulations, needs to be more detailed and specific concerning the innocent passage of MAS since they would enjoy the right of the innocent passage in the same way as manned ships.[15]

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[11] Aker Arctic Technology Inc Newsletter, Model Testing of Autonomous Ships, March 2018, https://akerarctic.fi/app/uploads/2019/05/arctic_passion_news_1_2018_Model-testing-of-autonomous-ship.pdf

[12] Convention on the Law of the Sea, 10 December 1982, 1833 U.N.T.S. 397 (entered into force Nov. 1, 1994)

[13] Article 90 of UNCLOS

[14] Hartmann, Jacques. "Regulating Shipping in the Arctic Ocean: An Analysis of State Practice." Ocean Development & International Law 49, no. 3 (2018): 276–99. https://doi.org/10.1080/00908320.2018.1479352.

[15] Veal R, Tsimplis M and Serdy A, "The Legal Status and Operation of Unmanned Maritime Vehicles" (2019) 50 Ocean Development & International Law 23

The limitations on the right of coastal states to adopt laws and regulations concerning innocent passage are mentioned under Article 21(2) of UNCLOS. However, MAS will put various scenarios into practice, raising the question of whether these restrictions are justified in the cases of MAS or whether IMO should adopt a common policy agreed by all states in general. Stronger passage rights for ships lying within territorial seas forming part of a strait used for international navigation is subject to the regime of transit passage under Articles 37-44 and also require clarification in the cases of MAS as well as under Article 35, where the straits are governed by longstanding international conventions.

While Article 58 provides the right to enjoy the exclusive economic zone as to Article 87, the rights and duties must be consistent with the laws and regulations of coastal states. MAS has not been intended to navigate only within national water but also in international water, thus, the jurisdiction of flag states and the freedom of seas needs to be applied pertinent to rules of international law. Article 90 gives the rights of navigation in the high seas to all ships of any state. Will this right lead to complications in the cases of navigation of MAS in the Arctic? Thus, it is notable to consider whether MAS shall enjoy the same freedom of high seas in the Arctic as other oceans or there should be some restrictions or limitations. IMO might serve the gap by setting up international standards to be followed. Furthermore, the requirement under *Article 98(1)* which mentions the duty of the master to assist any person found at sea in danger of being lost also needs revision in the cases of MAS in the Arctic.[16] Should a ship without a master be exempted from this duty or method of radio communications would be used to impose this duty?

According to Henrik Ringbom, the legal regime being established by UNCLOS is neither complete nor static, nor it was intended to be so.[17] The UNCLOS provisions have prescribed the general methods of balancing jurisdiction over shipping and other uses of the ocean. However, with time due to the changes in practices, application and interpretation of laws by courts and tribunals, advancement of technologies, climate change, protection of the environment and its

[16] Ringbom, Henrik. "Regulating Autonomous Ships—Concepts, Challenges and Precedents." Ocean Development & International Law 50, no. 2-3 (2019): 141–69. https://doi.org/10.1080/00908320.2019.1582593.
[17] Ringbom, Henrik. Jurisdiction over Ships: Post-UNCLOS Developments in the Law of the Sea. Leiden: Brill Nijhoff, 2015.

resources, new issues have arisen alongside the old challenges. Therefore, there seem to be differences between the jurisdictional arrangements under UNCLOS and their actual application by States. Hence, the lack of a clear and concrete definition of the term “ship” or “vessel” and the wordings of UNCLOS provision would create challenges while regulating MAS as well as enforcing rights and duties.

Considering that MAS will be safer and environmentally friendlier than the conventional ships, it will be more suitable for the Arctic. However, the MAS operation is already in the confrontation of facing regulatory challenges under the law of the sea. Hence, to accommodate MAS within the legal frameworks, it is important to give attention to the prospects of MAS operation in the Arctic including the high seas and the regulatory challenges that it might face. Special consideration should be given to the special nature of the Arctic ocean foreseeing the MAS operation in the Arctic high seas.