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A Strategic Proposal for Malaysia With Respect to the South China Sea Arbitration

*Jessica MAZZEO**

Abstract

China has claimed sovereignty over the islands and archipelagos within the South China Sea dating back to 1947 when the 'eleven-dash line' was first published by the Nationalist government of the Republic of China. Malaysia is one country that is particularly impacted by China's claim, which includes the Spratly Islands, a major pathway for global trade and home to marine life, and oil and gas reserves. This submission discusses the ruling of the Arbitral Tribunal established under Annex VII to the 1982 United Nation's Convention on Law of the Sea (UNCLOS) in *The Republic of the Philippines versus The People's Republic of China (Philippines v China)* – also commonly referred to as 'The South China Sea Arbitration' – and proposes a strategy for Malaysia.

Keywords: South China Sea, Nine-Dash Line, UNCLOS, Spratly Islands, proposal

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1. Introduction

China has claimed sovereignty over the islands and archipelagos within the South China Sea dating back to 1947 when the 'eleven-dash line' was first published by the Nationalist government of the Republic of China.[1] Malaysia is one country that is particularly impacted by China's claim, which includes the Spratly Islands, a major pathway for global trade and home to marine life, and oil and gas reserves.[2] This submission discusses the ruling of the Arbitral Tribunal established under Annex VII to the 1982 United Nation's Convention on Law of the Sea[3] (UNCLOS) in *The Republic of the Philippines versus The People's Republic of China* (*Philippines v China*) – also commonly referred to as 'The South China Sea Arbitration' – and proposes a strategy for Malaysia.

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1 Usuki, Eiichi, 'China's Three Distinctive Assertions under the 'Nine-Dash-Line' Claims and the Annex VII Arbitral Tribunal's Interpretation of Article 121 Regarding an Island and Rocks under the 1982 UN Convention on the Law of the Sea' (2015) 21 Asian Yearbook of International Law 143-144.

2 'The World Factbook: Spratly Islands' (*Central Intelligence Agency*) <www.cia.gov/library/publications/the-world-factbook/geos/pg.htm> accessed 7 April 2020.

3 United Nations Convention on the Law of the Sea (adopted 12 October 1982, entered into force on 16 November 1994) 1833 UNTS 3 (UNCLOS).

2. History of the South China Sea

Sovereignty over the Spratly Islands has long been contested, dating back to before the Second World War, at which time Taiwan was a Japanese colony. On 23 December 1939, Japan expanded its claims within the South China Sea to include southern maritime features, in particular, the Spratly Islands.[4] Save for the Pratas Islands, which Japan recognised in 1909 through the Japan-Ch'ing Agreement for Handing Over Pratas Island as being under the control of Imperial China,[5] the sovereignty over other maritime features in the South China Sea (including the Spratly Islands) remained contested during the period from 1938-1951. The 1951 Treaty of Peace with Japan mandated Japan relinquish all claims to territories, once again allowing other countries an opportunity to lay claim to them.[6]

2.1 China's Claims in the South China Sea

At the date of the People's Republic of China (PRC) establishment in 1949, several countries surrounding the South China Sea had already laid claim to its various maritime features. The PRC invoked historical claims to both the waters and insular features made by the former government, the Republic of China, to include: a three nautical mile territorial sea declared in the 1930s; the creation of a U-shaped line in the South China Sea in 1933; and most importantly, the 'eleven-dash line' map, which was published in 1947.[7] The PRC eliminated two dashes, and in 1953, the nine-dash line was officially asserted.[8] In 1958, the PRC declared a twelve nautical mile territorial sea, and in 1992, the PRC clarified that China's territorial sea included the Spratly, Paracel, and Pratas Islands in the South China Sea.[9] In 1996, the PRC ratified UNCLOS[10] and issued a Declaration on Exclusive Economic Zone (EEZ),[11] which made no mention of any historic maritime rights enjoyed by the PRC. It was not until 1998 in Article 14 of the EEZ law[12] that the PRC mentioned 'the preservation of a historic right.'[13]

China did not officially declare a statement to the international community detailing the extent and application of the nine-dash line until 2009. In that same year, Malaysia and Vietnam submitted an application to extend the limits of their claimed continental shelf beyond 200 nautical miles, to which China submitted the following response to the UN Secretary-General: 'China has indisputable sovereignty over

4 Usuki (n 1) 141-143.

5 ibid 141-143.

6 Usuki (n 1) 141-143.

7 ibid 143-144.

8 ibid 143-144.

9 U.S. Department of State, *Limits in the Seas* (No. 43 Straight Baselines People's Republic of China, 1978).

10 'Chronological lists of ratifications of, accessions and successions to the Convention and the related Agreements' (*Ocean & Law of the Sea United Nations*, 03 September 2020) <https://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm>.

11 China: Submission in Compliance with the Deposit Obligations pursuant to UNCLOS

12 Exclusive Economic Zone and Continental Shelf Act (adopted 26 June 1998, Standing Committee of the Ninth National People's Congress).

13 Usuki (n 1) 143-144.

the islands in the South China Sea and the adjacent waters, and enjoys sovereign rights and jurisdiction over the relevant waters as well as the seabed and subsoil thereof […] The above position is consistently held by the Chinese Government, and is widely known by the international community.'[14]

2.2 The Arbitral Tribunal's Rulings in the South China Sea case

In the ensuing years, international community awareness of issues concerning the South China Sea increased. The Philippines through a Statement of Claim of 22 January 2013[15] invoked arbitration under UNCLOS.[16] After much deliberation, it was decided that the Tribunal was duly constituted, as both the Philippines and China were parties to UNCLOS. China did not accept this decision, however, and continues to reject the Tribunal's award.[17]

The Tribunal ruled that historic rights claimed by China in the past were 'extinguished' and, therefore, 'incompatible' with UNCLOS, using two factors as the basis for their decision: UNCLOS provides certain rights to all of China's neighbouring South China Sea countries, and China's historic rights impinge upon the freedoms of these countries guaranteed by UNCLOS.[18] The Tribunal had to determine which features in the South China Sea were 'high-water insular' features, which are entitled to a territorial sea, contiguous zone, EEZ, and continental shelf as specified in Article 121 of UNCLOS, or 'rocks,' which are specified in Article 121(3) as explicitly not generating an exclusive economic zone or continental shelf.[19] The Tribunal concluded the Spratly Islands, in their natural condition, are not capable of sustaining human habitation or economic life of their own; that the high-tide features are not entitled to an EEZ or continental shelf; and therefore, China has no entitlement to an EEZ or continental shelf that extends into maritime features claimed by the Philippines.[20]

Regarding Mischief Reef and Second Thomas Shoal within the Spratly Islands, the Tribunal noted that they are located in an area 'not overlapped by the entitlements generated by any maritime feature claimed by China' and thus are part of the Philippine's EEZ and continental shelf.[21]

The Arbitral Tribunal ruled that Chinese historical claims to the nine-dash line were superseded by becoming a party to UNCLOS. The Tribunal found China in violation of Articles 60, 80, 77, 56, and 94 of UNCLOS for illegal fishing in other coastal state's EEZs; engaging in reconstruction activities and artificial island building in the Spratly Islands and causing permanent damage to the surrounding coral

14 UN General Assembly, *Note verbale dated 7 May 2009 from the Permanent Mission of the People's Republic of China addressed to the Secretary-General*, 7 May 2009, CML/18/2009, available at: https://www.un.org/depts/los/clcs_new/submissions_files/vnm37_09/chn_2009re_vnm.pdf [accessed 24 April 2020].

15 Consulate General of the Philippines 'Submission of Notification and Statement of Claim on the West Philippine Sea Dispute' (Chicago, 30 January 2013) 02-13.

16 Case 2013/19 *The South China Sea Arbitration* [2016], para 28.

17 Schofield, Clive, 'A Landmark Decision in the South China Sea: The Scope and Implications of the Arbitral Tribunal's Award' (2016) 38/3 Contemporary Southeast Asia 339-340.

18 ibid 340-342.

19 UNCLOS (n 3).

20 Case 2013/19 (n 16) paras 478-556, 571-646.

21 Schofield (n 17) 342.

reef; and enacting a ban in order to maintain sovereign control over resources—fisheries in particular—in the South China Sea. The Chinese were found guilty of harmful fishing practices and a failure to ensure the protection and preservation of the marine environment under UNCLOS Article 192.[22]

3. Impact of the Award

The Tribunal's award is of relevance for the wider region. The Spratly Islands, comprised of over one hundred small islands/reefs, are claimed mostly by China (and by extension, Taiwan) and Vietnam, although Brunei, Malaysia, and the Philippines have also claimed certain regions. The area surrounding these islands is mostly unexplored territory, but nearby oil and gas reserves suggest deposits also exist in this vicinity. The copious amount of fish in the area make it prime real estate for fisheries, which explains China's 'monopolistic behavior' in the region.[23]

In spite of the finality of the Tribunal's rulings in *Philippines v China*, China continues to exercise its 'rights' within its perceived EEZ. China has repeatedly acted to preserve its claims, including heightening military presence around maritime features to deter other coastal states from exercising control.[24] China's actions to curb Freedom of Navigation Operations (FONOPs)[25] transcend verbal warnings to leave its territorial sea; China's actions—such as encroaching within 45 yards of USS DECATUR while the vessel was performing a FONOP—increase the risk of collision, as they are contrary to rules developed to promote safe navigation.[26]

22 Case 2013/19 (n 16) paras 478-553, 571-646, 698-716,1015-1038, 1082-1109.

23 The World Factbook (n 2).

24 Beijing threatened to take military action in July of 2017 and again in May of 2018 if Vietnam did not cease oil and gas drilling in Vietnam's exclusive economic zone. In another incident, China blocked three Philippine civilian vessels from resupplying the BRP Sierra Madre, which was purposely grounded on Second Thomas Shoal in 1999 by the Philippines to prevent Chinese occupation.

25 FONOPS are conducted by the U.S. Navy in an effort to reinforce the international laws of the sea cited in UNCLOS and deter other countries from making excessive maritime claims. The Department of Defense's Annual Freedom of Navigation Reports can be found on the following website under Secretary of Defense for Policy <https://policy.defense.gov/OUSDP-Offices/FON/>.

26 Lynn Kuok, 'How China's Actions in the South China Sea Undermine the Rule of Law' (*Brookings*, 2019) </www.brookings.edu/research/how-chinas-actions-in-the-south-china-sea-undermine-the-rule-of-law/> accessed 7 April 2020, 4-5.

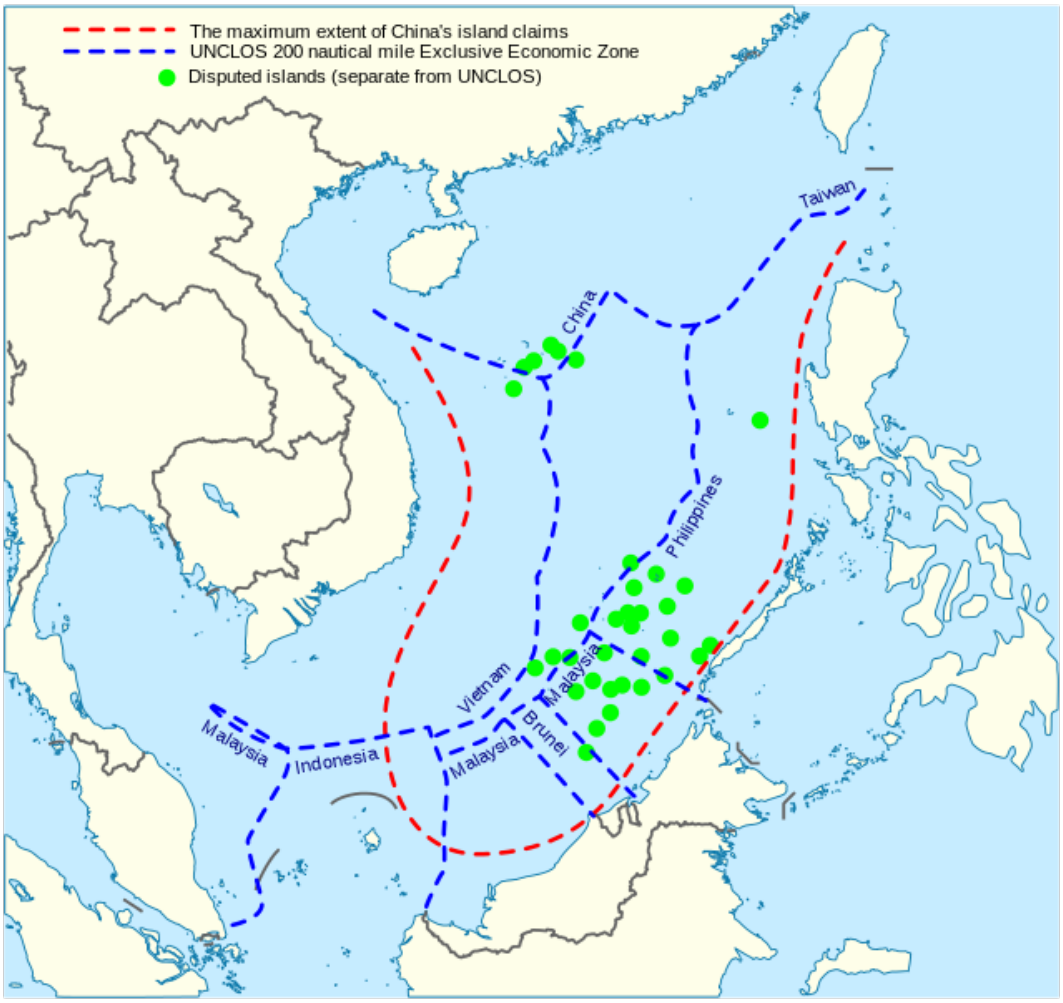

Figure 1

Source: Wikimedia

3.1 Potential Courses of Action for Malaysia

By putting its own interests above those of the international community, China is weakening the sustainability and credibility of international law. As seen in Figure 1, Malaysia's, Brunei's, Vietnam's, and the Philippine's EEZs all overlap parts of the Spratly Islands, and there currently exists no system that enables each of these coastal states to coexist peacefully while reaping the benefits of the maritime space. Because the Spratly Islands are mostly contained within Malaysia and the Philippine's claimed EEZs, Malaysia should set the example and be more proactive in asserting its rights within the limits of its own EEZ. The fact that China has consistently maintained Coast Guard presence around Loconia

Shoals, a low-tide elevation in Malaysia's exclusive economic zone, and that Malaysian Foreign Minister Saifuddin Abdullah denied seeing an increase in Chinese vessels despite several reports confirming the opposite speak to Malaysia's subservience to China's actions in the region.[27] When deciding on the appropriate course of action, Malaysia should take into account methods of decision-making from previous international conventions, such as the Montreux Convention,[28] the Proliferation Security Initiative,[29] and effective stances taken by other nations in regard to appropriate maritime conduct, specifically within the South China Sea.

Malaysia and China entered into a bilateral consultation mechanism on maritime affairs in 2019—an accord that serves only as a prolongation of peace and has no real implications that curb China's tendency to overstep boundaries.[30] Yet, it is argued that it would be prudent for each of the coastal states involved in the Spratly Islands dispute (including China, in order to eliminate a sense of secrecy and promulgate the intention of the other coastal states to freely exercise their rights) to gather in a forum and formally voice any complaints and, using the Montreux Convention as a guide,[31] create and become party to a resolution in which the coastal states agree upon their respective EEZs. The goal of the Montreux Convention, concluded in 1936, was to reach a conclusive decision regarding Turkey's ability to regulate maritime traffic through the Turkish Straits.[32] Such resolution between coastal states in the South China Sea need not match the degree of formality in the Montreux Convention; rather, it seems sufficient to use an approach similar to the Proliferation Security Initiative (PSI), in which a broad goal is voiced and each coastal state agrees to contribute to achieving that goal. One challenge in adopting methods used to promulgate the PSI and Montreux Convention is that the concepts governing these two agreements are quite unrelated to matters in the South China Sea. Furthermore, the Montreux Convention pertains to a vastly different operating space than the South China Sea, and Malaysia may find it difficult to reconcile these differences with their current situation.

The expectation is that, under this new resolution, the coastal states are obliged to only take what is theirs. And while Malaysia and Vietnam have defined the boundaries of each country's respective continental shelf,[33] no other country involved in the disputes has taken action to clearly delimit overlapping boundaries.[34] Thus, the first item on the agenda should be for the remaining countries—particularly the Philippines and

27 Kuok (n 26) 7.

28 Traduction - Translation: Convention Regarding the Regime of the Straits Signed at Montreux (adopted 24 July 1923, entered into force 20 July 1936).

29 'Proliferation Security Initiative' (*Nuclear Threat Initiative*, 31 May 2020) <https://www.nti.org/learn/treaties-and-regimes/proliferation-security-initiative-psi/>.

30 Kuok (n 26) 7.

31 The Montreux Convention contains several provisions regarding Turkey's rights in various scenarios for allowing vessels to pass through its straits, along with vessels' rights when operating in the Black Sea. Some of the provisions include: the requirement of vessels of war transiting through the Straits to provide advance notification to the Turkish government (save for war vessels that solely carry fuel); all merchant vessels—except those transiting from the Black or Aegean Sea, who must first stop at a sanitary station—shall enjoy freedom of transit and navigation at all times. The Montreux Convention ultimately gave Turkey control over the Turkish Straits.

32 Traduction - Translation: Convention Regarding the Regime of the Straits Signed at Montreux (adopted 24 July 1923, entered into force 20 July 1936).

33 Joint Submission to the Commission on the limits of the Contintental Shelf pursuant to Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea 1982 in respect of the southern par tof the South China Sea (adopted 06 May 2009, entered into force for Malaysia 13 November 1996 and for Vietnam 16 November 1994).

34 Table of claims to maritime jurisdiction (15 July 2011) <https://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/table_summary_of_claims.pdf>.

Brunei—to follow the precedent set by Malaysia and Vitenam. Once boundaries have been established, coastal states may fish and drill for oil within their respective boundaries, but they also must uphold environmental protection policies to preserve the environment. Malaysia should acknowledge that many of the coastal states have overlapping claims; for those boundaries that overlap, the respective coastal states to whom that applies will sign a joint agreement to share the resources within that area. Being particularly invested due to the Spratly Islands dispute with China, Malaysia should support the creation of a resource and reporting agency similar to the European Maritime Safety Agency (EMSA), which requires European countries to respect and take measures to protect the environment. The Common Information Sharing Environment (CISE) is voluntary and enhances information sharing among all European and EU/EEA Member States in order to conduct surveillance and operational tasks and provide a means for regulating, *inter alia*, fisheries, marine pollution, general law enforcement, and border control.[35] Incorporating this framework designed by EMSA into the South China Sea would provide the affected coastal states with a means for logging resources by area and country, enforcing the boundaries of each coastal state's EEZ, regulating fisheries, and so much more.

Additionally, Malaysia should encourage the other coastal states involved in the forum to emulate Europe's position and adopt a 'principled neutrality' strategy.[36] This mindset involves reiterating guiding principles (i.e. principles identified from UNCLOS and other international law) and the impact that clarifying these principles can have. The neutrality aspect concerns territorial sovereignty.

Whilst it is naïve to expect the countries surrounding the South China Sea to adopt the neutrality aspect, Malaysia should emphasise the importance of respecting and acknowledging customary international law, which in turn could create a stable operating space for all vessels transiting the South China Sea.

3.2 Potential Adversities Expected from Suggested Strategy

Malaysia should expect significant challenges to accompany this proposed strategy. One such challenge regarding the enforcement of utilising resources only within one's EEZ is that China will most likely continue to assert its dominance within any coastal state's national waters that fall within China's nine-dash line. Furthermore, because China has rejected the arbitral award, it is very likely that China will build on Scarborough Shoal and complete its 'three-pronged security triangle.'[37] In order to counteract that, Malaysia should organise, with the help of the United States, its allies, and the other coastal states whose EEZs are being encroached upon, a non-escalatory show of force by posting ships from each nation's navy within their EEZs and actively practising their rights.

Pursuance of the proposed strategy will by no means be an easy feat for Malaysia. It will take a significant amount of time and cooperation among regional actors in the South China Sea and their allies to overcome the various challenges to this proposal, posed mostly by China. At the end of the day, however, Malaysia's goal should be to create a safer, more secure operating environment in which neighbouring coastal states cooperate and recognise one another's rights: a *mare liberum*.

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35 EMSA, 'Common Information Sharing Environment (CISE)' (*European Maritime Safety Agency*, 2020) <www.emsa.europa.eu/operations/vessel-reporting-services.html> accessed 7 April 2020.

36 Mathieu Duchâtel, 'The European Union's 'Principled Neutrality'—Can It Achieve Anything?' in Eva Pejsova (ed), *Sense and Sensibility: Addressing the South China Sea Dispute* (EUISS 2016) 53-56.

37 Kuok (n 26) 8.

Maritime Safety and Security Law Journal

Repressing Piracy off the Nigerian Waters: Lessons from Korea

*Kalu Kinglsey ANELE**

Abstract

Literature on piracy in Nigeria abound. However, limited insights have been suggested on how to effectively enforce antipiracy legislation through an enhanced institutional regime, from a comparative perspective. This study interrogates the significance of well-equipped and well-trained maritime regulatory and security institutions in enforcing antipiracy instruments in Nigeria. Thus, the study comparatively analyses Nigeria and Korea's counterpiracy frameworks. The results of the study provide significant support to the author's thesis that corrupt and inefficient maritime institutions, an inefficient criminal justice system, bad governance, poverty, unemployment, and absence of political will by the government of Nigeria to curb piracy impede the suppression of piratical acts in the country. It is argued that the existence of well-trained and well-equipped maritime regulatory and security agencies is pivotal in enforcing the provisions of antipiracy instruments and prosecuting pirates in Nigerian courts. Above all, the Nigerian government must cultivate the political will to suppress piracy off its coast. The findings of this study have significant implications for the judiciary, maritime regulatory and security agencies, and shipping companies in Nigeria.

Keywords: piracy, Nigeria, Korea, legal regime, institutional framework, UNCLOS, SUA Convention

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1. Introduction

As the biggest economy in Africa[1], maritime transportation is crucial to the economy of Nigeria. Given that Nigeria is a riparian state that depends on the exportation of raw materials, like crude oil, and the importation of finished goods, it is imperative to enhance the country's maritime domain awareness. According to recent International Maritime Bureau's (IMB) piracy reports, Nigerian coast has become risky and dangerous for navigation due to piracy and shipping companies are warned to be vigilant while traversing this sea route[2]. The implication is that shipping companies may not use Nigerian ports for

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1 Prinesha Naidoo, 'Nigeria tops South Africa as the Continent's Biggest Economy' *Bloomberg* (New York, 4 March 2020) <https://www.bloomberg.com/news/articles/2020-03-03/nigeria-now-tops-south-africa-as-the-continent-s-biggest-economy> accessed 4 April 2020.

2 See the ICC IMB, 'Piracy and Armed Robbery against Ships: Report for the Period 1 January – 31 December 2020' January 2021 (IMB Piracy Report 2020) 23 and the ICC IMB, 'Piracy and Armed Robbery against Ships: Report for the Period 1 January – 31 December 2019' January 2020 (IMB Piracy Report 2019) 21.

transhipments or convey cargo from Nigeria to other countries. Also, shipping companies may reroute Nigerian cargo to other neighbouring countries due to insecurity in the country's waters. Fishing is another subsector that contributes to the Nigerian economy[3] and it has been hampered as a result of incessant piratical acts off the country's waters.

In light of the significant role the maritime industry plays in Nigeria's social, economic, security and political development, it is imperative to suggest measures that will enhance antipiracy activities off the country's waters. In spite of Nigeria's efforts to curb piracy in its waters, including the introduction of a private security company to assist the Nigerian maritime regulatory and security agencies to police the country's coastline[4], pirates have continued to attack vessels off the country's coast. Also, Nigeria has enacted antipiracy legislation, the Suppression of Piracy and Other Maritime Offences (SPOMO) Act, and prosecuted pirates in its court[5]. However, it is observed that the implementation of the antipiracy law in Nigeria may be fraught with institutional challenges as the courts may have limited experience and facilities to properly and promptly adjudicate piracy cases. In addition, the criminal justice system in Nigeria is rife with many challenges, such as corruption. It could be argued that maritime regulatory and security agencies in Nigeria may not possess the requisite competence to combat piracy owing to lack of modern equipment and inadequate training of their officers to conduct forensic investigations considering the nature of piracy, the mobility of vessels and seafarers, and the *locus* of the crime.

Consequently, this paper comparatively analyses the antipiracy regimes of Nigeria and South Korea (hereafter Korea) in order to suggest measures to prevent piratical acts in Nigerian waters. This paper argues that unlike Nigeria, the Korean government has used its domestic legislation to prosecute pirates despite the absence of piracy in Korean waters. The government of Korea was able to achieve this by cultivating and exhibiting a strong political will to combat piracy both in its waters and on the high seas. Furthermore, the Korean government provides sophisticated surveillance and communication equipment to its maritime regulatory and security agencies to maintain effective maritime domain awareness over its maritime zone. The government of Korea routinely sends its navy to patrol navigational routes that are affected by piracy and

3 Theophilus Nwokedi, *et al,* 'Frustration-aggression-theory Approach Assessment of Sea Piracy and Armed Robbery in Nigerian Industrial Trawler Fishery Sub-sector of the Blue Economy' (2020) 8(2) Journal of ETA Maritime Science https://dx.doi.org/10.5505/jems.2020.29053, 114, 114-132 and Abdullahi S. Usman, *et al,* 'Impact of Piracy and Sea Robberies on Fishing Business in Nigeria: A Focus on Lagos Coastal Area' (2019) 20(4) Review of International Comparative Management, DOI: 10.24818/RMCI.2019.4.396, 396, 397.

4 See Kalu K. Anele, 'Addressing the Issue of Piracy off Indonesia and Nigeria: The Need for a Paradigm Change' (2020) VII Indon. J. Int'l & Comp. L., 245, 263 and William Clowes, 'Drones, Choppers to Police Pirate-infested Waters off Nigeria' *Bloomberg* (22 February 2021) <https://www.bloomberg.com/news/articles/2021-02-22/drones-choppers-to-police-pirate-infested-waters-off-nigeria> accessed 11 April 2021.

5 See the SPOMO Act 2019 Nigeria. The SPOMO Act incorporated the definition of piracy contained in the United Nations Convention on the Law of the Sea (UNCLOS), adopted 10 December 1982, (entered into force 16th November 1994) 1833 UNTS 3, art 101. See the case of *Federal Republic of Nigeria v Binaebi Johnson & Co*, Suit No.FHC/PH/62c/2020 (Unreported).

other maritime threats[6]. Besides, Korea has strengthened its piracy legal regime and institutional framework, cooperated with regional antipiracy groups and other relevant institutions, installed communication and surveillance facilities, and promoted good governance and economic prosperity in the country. These factors have been instrumental in maintaining maritime domain awareness in Korea, the rescue of the Korean seafarers and vessels hijacked by pirates on the high seas and the waters of other countries, and the subsequent arrest and prosecution of these pirates in Korean courts[7].

This paper argues that comprehensive antipiracy efforts similar to those of Korea could be adopted by Nigeria to prevent piracy and combat, arrest, and prosecute pirates in Nigerian courts. This will enhance the repression of the crime in Nigeria. Though the countries have different legal systems - Nigeria is a common law country while Korea is a civil law nation - both countries are riparian states that engage in fishing, participate in international trade, and shipping plays a key role in their respective economies. These factors engender the need for this research, as Nigeria will benefit from the antipiracy regime in Korea. Thus, to suppress piracy using the Korean model, Nigeria should effectively enforce the SPOMO Act, adequately equip and fund its maritime regulatory and security agencies, and introduce an effective criminal justice system. Also, Nigeria should provide modern surveillance and communication equipment to its maritime regulatory and security agencies to maintain an effective maritime domain awareness of its waters, regularly cooperate with regional countries, maritime organisations and the shipping industry, address the onshore causes of piracy through good governance, and cultivate the political will to curb piracy.

The paper is divided into six parts. Part one is the introduction. Part two reviews the nature, legal regime, and institutional framework of piracy in Korea. Thereafter, Part three addresses the nature, legal regime, and institutional framework of piracy in Nigeria. Part four undertakes a comparative analysis of piracy regimes in Korea and Nigeria. The essence of this section is to highlight the differences in the antipiracy efforts of both countries, with a view to identifying the factors that impede piracy suppression in Nigeria. In light of that, Part five assesses the lessons Nigeria could learn from Korea's antipiracy framework. It is submitted that the introduction of these measures will enhance the repression of piracy in Nigeria. Part six concludes the paper by reiterating the effectiveness of Korea's antipiracy regime and reemphasising the importance of adopting and implementing the Korean counterpiracy stratagem in Nigeria.

2. Nature and Legal Regime of Piracy in Korea

The paper observes that because of Korea's effective antipiracy framework, piratical acts do not occur off its coast. Piracy only affects Korea through attacks on the country's vessels or vessels with

6 It is common knowledge that Korean navy participated in the global antipiracy efforts to suppress Somali pirates in the Gulf of Aden and Indian Ocean by joining the United States (US)-led Combined Task Force (CTF) - 151 in 2009. Recently, the Korean government has also continued its contribution in maintaining a secured sea route by sending its navy to the Gulf of Aden. See Oh Seok-min, '(2ndLD) New Batch of S. Korean Troops Departs for Somali Waters Amid Speculation over Hormuz Strait Mission' *Yonhap News Agency* (Seoul, 13 August 2019) <https://en.yna.co.kr/view/AEN20190813002252325> accessed 2 April 2020.

7 See the case of *Republic of Korea* v Araye (2011 Do 12927 Verdict, issued December 22, 2011[Supreme Court]).

Korean crewmembers or vessels conveying Korean cargo in other countries' waters or on the high seas as witnessed in the attacks of *Samho Dream* and *Samho Jewelry* off the coast of Somalia[8].

2.1 Nature of Piracy in Korea

Korea plays a significant role in the global maritime industry.[9] First and foremost, Koreans own some of the biggest shipbuilding companies in the world, like Samsung Heavy Industries, Daewoo Shipbuilding and Marine Engineering, and Hyundai Heavy Industries.[10] Also, Korea's Hyundai Merchant Marine and Korea Marine Transport Company (KMTC) are among the top 30 international shipping companies in the world.[11] As an industrialised country that engages in international trade, Korea's economy depends on the importation of raw materials and the exportation of finished goods. Data from World Trade Organisation reveals that Korea is ranked 5th in the global top ten exporters of manufactured goods in 2018[12]. Due to Korea's well-established strides in shipbuilding, shipping lines, and international trade, it is necessary to protect its maritime domain and safeguard its flagged vessels and vessels trading with Korean-ports.

While piracy attacks do not take place off the coast of Korea, Korean owned or flagged vessels, Korean seafarers aboard vessels, and Korea-bound ships are hijacked during their navigation through international shipping lanes, especially shipping routes that are risky for navigation. Thus, tankers transporting Korea's oil and gas purchased from the Middle East and Africa may pass through maritime security hotspots, such as the Strait of Hormuz, the Gulf of Guinea, the Indian Ocean, the Gulf of Aden and the Strait of Malacca before calling at Korean ports. Though piracy may not be an existential threat to Korea's national security, piracy routines impact Koreans and Korea's economic activities[13]. Lending credence to the fact that piracy does not pose a threat to the security of Korea rather to the economic

8 For detailed reading on the attacks against *Samho Dream* and *Samho Jewelry,* see generally Terence Roehrig, 'South Korea's Counterpiracy Operations in the Gulf of Aden' <https://www.belfercenter.org/sites/default/files/legacy/files/globalkorea_report_roehrig.pdf> accessed 2 April 2020.

9 According to data from Clarkson Research Services, Korea won shipbuilding orders worth 1.29 million compensated gross tons in October, overtaking China to reclaim its number one spot in global shipbuilding orders in October 2019. 'Korean Shipbuilding Industry' *GlobalSecurity.org* (Alexandria) <https://www.globalsecurity.org/military/world/rok/industry-shipbuilding.htm> accessed 24 January 2020.

10 As at 2018, Korea was the second largest shipbuilding country in the world due to its 63.8m dwt orderbook (a 27.5% market share) and for its 30.4m dwt of newbuilding orders (26% market share). 'Shipbuilding' BRS Group Annual Review, 2019, 20 <https://www.brsbrokers.com/assets/review_splits/BRS-Review2019-01-Shipbuilding.pdf> accessed 13 April 2010. See also Kalu K. Anele, 'A Comparative Analysis of the Arrest of Ship Procedures in Nigeria and Korea' (2020) 19 Journal of Korean Law, 191, 197.

11 Matt Woodley, 'Top 30 International Shipping Companies' *MoverFocus.com,* (Copenhagen, 27 September 2019 <https://moverfocus.com/shipping-companies/> accessed 14 April 2020.

12 'World Trade Statistical Review 2019' World Trade Organisation, 33 <https://www.wto.org/english/res_e/statis_e/wts2019_e/wts2019_e.pdf> accessed 25 January 2020. See also K.K. Anele, 'A Comparative Analysis of the Arrest of Ship Procedures in Nigeria and Korea' (n 10) 197-198.

13 Bridget L. Coggins & James J. Kim, 'How Korea can Better Manage Maritime Piracy and Terror' The Asian Institute for Policy Studies, Issue Brief, 10 March 2014, 1-2.

activities in the country, including fishing,[14] Coggins and Kim aptly observe that:

> *'The hijacking of any tanker, or even a handful of tankers, does not pose an acute security threat to Korea. Rather, the threat is primarily economic. The costs of transporting energy rise with the threat of piracy, and not only due to increased time and distances from rerouting; due to larger crews to stand watch; due to delays from incident reporting and investigation; and occasionally due to increased salaries for at risk crewmembers. These costs are passed on to the government, business and industry, and ultimately, to the consumer'* .[15]

2.2 Piracy Legal Regime in Korea

Like many countries,[16] Korean domestic laws recognise and criminalise piracy. According to article 340 (1) of the Criminal Act (CA),[17] piracy means 'the threat of collective force in the sea, forcibly seizes a ship or forcibly takes another's property after intruding upon a ship'.[18] In terms of punishment for piracy offence, the Act further stipulates a punishment 'by imprisonment for life or for not less than seven years'.[19] It could be argued that the Korean piracy definition could cover the nature of contemporary piracy, like piracy off the Nigerian coast, as there are no apparent limitations in the text with regards to geographical location of the crime. However, it is observed that the absence of private ends principle (as opposed to public ends), the lack of two ship requirement, and the need for several attackers in the CA definition of piracy differ from the United Nations Convention on the Law of the Sea (UNCLOS) definition.

Article 101 of UNCLOS defines piracy as a violent attack against a vessel on the high seas by another vessel for private ends. It is significant to note that this definition has generated a lot of debates among legal scholars because of its inherent limitations.[20] Wallner and Kokoszkiewicz argue that since article 101 was promulgated by compromise, the provision is tautologous and lacks coherence.[21]

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14 It has been suggested that the hijack of the fishing boats owned by Korean companies, Dongwon Fisheries and Daechand Fisheries, was one of the reasons Korea became part of the global antipiracy naval task force. T. Roehrig, 'South Korea's Counterpiracy Operations in the Gulf of Aden' (n 8) 28-29.

15 B.L. Coggins & J.J. Kim (n 13) 5.

16 See Merchant Shipping Act (MSA) 2009 Kenya, s 371; the Penal Code (Kitab Undang-Undang Hukum Pidana/KUHP), Indonesia, art 438 and the Criminal Code, the Netherlands, art 381 (1)(1).

17 No. 15982, 18 December 2018.

18 The Act on Punishment for Damaging Ship and Sea Structures (APDS Act), Act No15155, 12 December 2017, which domesticated the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, adopted 10 March 1988, (entered into force 1 March 1992) 1678 UNTS 221, (SUA Convention), is another Korean domestic law that criminalises piracy.

19 The CA, art 340 (1).

20 K.K. Anele, 'Addressing the Issue of Piracy off Indonesia and Nigeria' (n 4) 259; Osatohanmwen A. Eruaga & Maximo Q. Mejia Jr., 'Piracy and Armed Robbery against Ships: Revisiting International Law Definitions and Requirements in the Context of the Gulf of Guinea' in Aldo Chircop, *et al,* (eds.) *Ocean Yearbook 33* (Brill Nijhoff 2019) 435-441 and Ilja V. Hespen, 'Developing the Concept of Maritime Piracy: A Comparative Legal Analysis of International Law and Domestic Criminal Legislation' (2016) 31 Int'l J. of Mar. & Coast. L. DOI: 10.1163/15718085-12341395, 279, 287-288.

21 Michal Wallner & Artur Kokoszkiewicz, 'Maritime Piracy and Limitations of the International Law of the Sea' (2019) 28(35) Historia i Polityka, 25, 29

Gottlieb suggests that the high seas limitation of the definition of piracy is a geographical conundrum that seems to ignore the impact of contemporary technology, the mobility of pirates, "dry land" facilitators, and "failed states" on combating piracy.[22] Further, the high seas limitation of the definition of piracy implicates on the nature of contemporary piracy, which occurs mostly in the territorial waters of riparian states. It potentially limits the enforcement of antipiracy measures in piracy hotspots. As Fuchs observes, the definition of piracy is unsatisfactory since it contains many missing links.[23] The import of these limitations is far-reaching given that most piracy hotspots, exemplified by the coast of Nigeria, are within the territorial waters of coastal states and these coastal states lack the necessary legal regime and institutional framework to monitor their maritime domain and combat piracy *suo motu*. In all, terrorist attacks may be for a political reason, nonetheless, it does not mean that they are not for private ends,[24] which reveals another gap in the global piracy legal regime.

Further, the use of piracy definition that includes attacks that occur in the territorial waters of coastal states (armed robbery against ships) to support piracy data[25] lends credence to the argument that the Korean piracy legal framework used in prosecuting the Somali pirates[26] is in line with the need to curb piracy through prosecution. Besides, the CA and UNCLOS have a common denominator: the provision of the legal regime to prosecute pirates. More importantly, the enforcement of the CA is in line with the provision of article 105 of UNCLOS authorising the arresting states to prosecute pirates in their local courts. The fact that the Korean piracy legal framework did not capture extensively the provisions of article 101 of UNCLOS had no impact on the prosecution of the Somali pirates in Korean courts.

The polemical definition of piracy in article 101 of UNCLOS aside, a review of Korean laws reveals that piracy is adequately criminalised. In view of the international instruments that criminalise piracy and armed robbery at sea, the Korean Constitution provides that '[t]reaties duly concluded and promulgated under the Constitution and the generally recognized rules of international law shall have the effect as the domestic laws of the Republic of Korea.'[27] The logical interpretation that could be ascribed to the above provision is 'that article 105 of UNCLOS is part of the laws of Korea, giving Korea jurisdiction over acts of piracy on the high seas.'[28] In other words, in the absence of the CA, the Criminal Procedure Act (CPA),[29] and the Act on Punishment for Damaging Ship and Sea

22 Y. Gottlieb, 'International Cooperation in Combating Modern Forms of Maritime Piracy: Legal and Policy Dimensions' University of Amsterdam UvA-DARE (Digital Academic Repository), 2017, 38-55.

23 Ilan Fuchs, 'Piracy in the 21st Century: A Proposed Model of International Governance' (2020) 51(1) Journal of Maritime Law & Commerce 1, 4.

24 I.V. Hespen (n 20) 288.

25 See generally the IMB Piracy Report for 2019 (n 2).

26 *Araye* (n 7) .

27 The Constitution of the Republic of Korea, No. 10, 29 October 1987, art 6 (1).

28 Robert C. Beckham & Ashley J. Roach, 'Ratification and Implementation of Global Conventions on Piracy and Maritime Crimes' in Robert C. Beckham & Ashley J. Roach (eds.) *Piracy and International Maritime Crimes in ASEAN: Prospects for Cooperation* (Edward Elgar Publishing Limited 2012) 181-182.

29 No. 16924, 4 February 2020.

Structures Act (APDS Act); Korean courts may have jurisdiction to prosecute pirates on account of the provision of article 6(1) of the Korean Constitution.

Notwithstanding the above, a review of the provisions of the CPA reveals that the Act applies extraterritorially only if the offenders were Korean nationals or if the crime was committed on a Korean vessel.[30] A practical example of the application of Korea's piracy statutory provisions was aptly demonstrated in the *Araye's case;*[31] in which several Somali pirates operating in the Gulf of Aden were arrested by the Korean Forces on 21st January 2011 for attacking a Korean vessel, *Samho Jewelry.* The arrested pirates were taken to Korea where they were charged, prosecuted, and were found guilty of engaging in piratical acts by the Korean courts under the country's legislation and constitution.[32] Among other charges,[33] the pirates were charged with maritime robbery and attempted murder, obstruction of justice, infliction of injury, and violation of articles 5 and 6 of the APDS Act. The pirates were sentenced to 13 years, 15 years, and life imprisonment accordingly.[34]

In its decision, the court ruled that it had territorial jurisdiction over the case due to the current location of the defendants.[35] Article 4(1) of the CPA states that '[t]he territorial jurisdiction of the court shall be determined by the place of offense, the place of domicile, the residence of the defendant, or the place where the defendant is presently located'. Also, the Korean court assumed jurisdiction to prosecute these Somali pirates due to the ship that was attacked by the pirates was flying a Korean flag. Lastly, Beckham and Roach conclude that if the vessel that was attacked 'had been flying a foreign flag, Korea would not have had jurisdiction under Korean law unless article 6(1) of the Constitution were interpreted to make the UNCLOS provisions part of Korean law.'[36]

However, Lee and Lee suggest that the prosecution of the Somali pirates in Korea was problematic and exhibited some procedural limitations, especially in view of the rights and liberties of the accused persons.[37] Nevertheless, the existence of these domestic laws criminalising piracy and providing jurisdiction for the Korean courts significantly contributed to the prosecution of the Somali pirates. In addition, the liberal interpretation of the relevant laws and the constitution by the Korean courts and the efficiency of the Korean criminal justice system that led to an expeditious hearing of the case[38] - which should be commended - are some of the major factors that could contribute to the repression of piracy off the Nigerian coast.

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30 The CPA, arts 4 (1-3).

31 \For detailed analysis of the case, see Seokwoo Lee & Hee Eun Lee T*he Making of International Law in Korea: From Colony to Asian Power* (Brill Nijhoff 2016) 274-280 and Seokwoo Lee & Young K. Park, 'Republic of Korea v. Araye' (2012) 106(3) The American Journal of International Law, 630, 630-636.

32 See *Araye* (n 7).

33 S. Lee & H.E. Lee (n 31) 264.

34 See *Araye* (n 7).

35 S. Lee & H.E. Lee (n 31) 264.

36 R.C. Beckham & A. J. Roach (n 28) 182.

37 S. Lee & H.E. Lee (n 31) 268-269.

38 ibid 265.

2.3 Institutional Regime for Curbing Piracy in Korea

The existence of piracy legal regime without an efficient institutional framework would not necessarily and effectively curb piracy. Thus, the antipiracy law and other relevant maritime security instruments in Korea are enforced by maritime regulatory and security agencies: the Korean Coast Guard (KCG) and the Korean Navy (KN) respectively. The KCG has continued to maintain adequate maritime domain awareness, leading to the prevention of maritime crimes - particularly piracy - off the Korean coast. Additionally, the KN, especially the Cheonghae Unit, engages in antipiracy operations in piracy-infested sea routes around the world. For example, the Korean antipiracy naval unit participated in the United States (US)-led Combined Task Force (CTF) 151 and the Shared Information and Deconfliction (SHADE) Group in curbing piracy in the Gulf of Aden;[39] strengthening the significant role regional cooperation plays in repressing piracy.

The government of Korea has continued to provide modern facilities[40] and regularly train officials of these agencies. For instance, the Cheonghae Unit has continued to engage in counterpiracy drills with other related maritime agencies in Korea to enhance the Unit's preparedness for piracy situations.[41] The import of this is that the Korean maritime regulatory and security agencies are not only well-equipped but also well-trained in the use of surveillance and communication facilities and in conducting antipiracy operations overseas.

In view of using regional cooperation to curb piracy, Korea has continued to play a key role in antipiracy activities in Asia and around the world. Aside from its counterpiracy efforts in the Gulf of Aden, the Strait of Hormuz, and the Indian Ocean, Korea plays a significant role in the antipiracy activities in Asia through funding and manpower development.[42] These efforts contribute to curbing piracy in Asian waters. Lastly, the efficiency and effectiveness of the Korean criminal justice system significantly contributed to the expeditious conclusion of *Araye*'s case in the country, unlike Nigeria where cases last for years due to, *inter alia,* limited infrastructure and procedural bottlenecks.[43]

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39 Daewon Ohn & Mason Richey, 'Cooperation on Counter-piracy in the Gulf of Aden among China, Korea, and Japan: Implications for Trilateral Security Cooperation in Northeast Asia' (2014) 26(1) The Korean Journal of Defense Analysis DOI: 10.22883/kjda.2014.26.1.006, 81, 84-86.

40 It has been reported that since 2001, Korea has added 3 classes of destroyers, 3 Aegis ships, and 2 large-deck helicopter amphibious assault ships (LPH). Currently, Korea government plans to build 3 more Aegis destroyers, another LPH, patrol ships, frigates, and submarines. Terrence Roehrig, 'South Korea: The Challenges of a Maritime Nations' The National Bureau of Asian Research (NBR), 23 December 2019 <https://www.nbr.org/publication/south-korea-the-challenges-of-a-maritime-nation/> accessed 10 April 2020.

41 'Gov't to Carry out Counter-piracy Drill' *Yonhap News Agency,* (Seoul, 14 March 2019) <https://en.yna.co.kr/view/AEN20190314001400320> accessed 10 April 2020.

42 'Executive Director's Report' ReCAAP/Information Sharing Centre, 2016, 4.

43 For detailed analysis of the factors that lead to delay in the dispensation of justice in Nigeria, see generally Adedoyin Akinsulore, 'The Nigeria Police Philosophy and Administration of Criminal Justice Post 2015: Interrogating the Dissonance' (2020) 4(2) Sriwijaya Law Review, DOI:10.28946/slrev.Vol4.Iss2.432.pp136-153, 136, 136-153; Oladimeji Ramon, 'Justice Suffers Delay in Nigerian Courts amidst Plenty IT Solutions' *Punch* (Lagos, 27 December 2019) <https://punchng.com/justice-suffers-delay-in-nigerian-courts-amidst-plenty-it-solutions-2/> accessed 12 April 2020 and Jude Cocodia, 'Identifying Causes for Congestion in Nigeria's Courts via Non-participation Observation: A Case Study of Brass High Court Bayelsa State, Nigeria' (2010) 1(1) International Journal of Politics and Good Governance 1, 1-16.

3. Nature and Legal Regime of Piracy in Nigeria

This section discusses the nature of piracy in Nigeria and the extant national legal and institutional regimes for curbing the crime. Unlike Korea, piracy occurs off the coast of Nigeria with humanitarian, socio-political, and economic impacts on the country. For instance, in the 2020 IMB piracy report, the highest number of actual and attempted piracy attacks in the world (35) occurred off the coast of Nigeria and the highest number of direct attacks on seafarers also took place in the country (6 seafarers were taken hostage and 62 were kidnapped).[44] Economically, piratical acts and the theft of crude oil off the Nigerian waters culminated in the loss of about US $750 million by the country.[45] Beyond its adverse effect on the fishing industry,[46] piracy has led to the payment of over US$2.74 billion over a period of four years, from 2015 to 2018, as 'insurance surcharges and other sundry surcharges imposed on Nigerian shipments simply because the country's territorial waters is not safe for navigation.'[47] And unlike Korea, piracy potentially affects Nigeria's implementation of regional agreements[48] and Nigeria's tourism sector.[49]

3.1 Nature of Piracy in Nigeria

In contrariety to the regime in Korea, piracy in Nigeria has a historical flavour. Piracy in Nigeria emerged as a statute during the colonial era.[50] The exploitation and sale of natural resources, other maritime activities, onshore violent activities, and transnational organised criminal activities sustained piracy off the country's coast.[51] Again, contrary to the Korean regime, piracy off the coast of Nigeria is largely

44 IMB Piracy Report 2020 (n 2) 6/12.

45 See Kalu K. Anele, 'The Potential Impact of Piracy on the ACFTA: A Nigerian Perspective' (2021) 8(1) Journal of Territorial and Maritime Studies DOI:10.2307/JTMS.8.1.5, 5, 16.

46 See ibid and Idowu Johnson, 'Piracy as Threat to Africa's Security and Economic Development' (2018) 6(1) Covenant University Journal of Politics & International Affairs, 30, 36.

47 'Maritime Piracy: Nigeria Loses U2.74bn in Four Years' *Hellenic Shipping News Worldwide* (Cyprus, 26 November 2018) <https://www.hellenicshippingnews.com/maritime-piracy-nigeria-loses-us2-74bn-in-four-years/> accessed 13 April 2020. Also, Nigeria loses US$2.8billion annually to piracy and other maritime crimes. Charles A. Adeogun-Phillips, 'The Investigation of Crimes in Nigeria under the Suppression of Piracy and Other Maritime Offences Act: Challenges and Potential' a paper presented at NIMASA-NIALS 9th Admiralty Law Seminar for Judges, 19-21 February 2020 at Raddisson Blu Anchorage Hotel, Ozumba Mbadiwe Avenue, Victoria Island, Lagos State (a copy of the paper is on file with this author).

48 See generally K.K. Anele 'The Potential Impact of Piracy on the ACFTA: A Nigerian Perspective' (n 45) 5-26.

49 See Kalu K. Anele, 'The Potential Effects of Piracy on the Art-craft Industry: A Comparative Analysis of Nigeria and Indonesia' (2020) 10(2) Indonesian Law Review, DOI: http://dx.doi.org/10.15742/ilrev.v10n2.652, 217, 217-237 and Toakodi Adongoi, *et al*, 'Sea Robbery and its Implication on Tourism Development in Niger Delta region of Nigeria' (2019) 2(1) International Journal of Social & Management Sciences 1, 1-13.

50 During the colonial era in Nigeria, the British government introduced a law, the Slave Trade Act of 1825, which stipulated that any British subject that uses his vessel in slave trade activities is guilty of piracy.

51 For further reading on the history of piracy in Nigeria, see K.K. Anele, 'Addressing the issue of piracy off Indonesia and Nigeria' (n 4) 250. See also Akinsola Jimoh, 'Maritime Piracy and Lethal Violence Offshore in Nigeria' IFRA-Nigeria Working Papers Series, 51, 2015, 5.

linked to onshore insecurity[52] as a result of bad governance and socioeconomic deprivation. In light of that, the resource control agitation that culminated in the kidnapping of foreign expatriates that work for the multinational oil companies, the pollution of the Niger Delta communities, bad governance, corrupt government officials, and political violence also contributed to the emergence of modern piracy in Nigeria. Summarily, the existence of extreme poverty, high rate of unemployment, corruption in the maritime sector, insecurity and political violence are some of the major causes of piracy offshore the country.[53]

Many scholars have linked modern piracy in Nigeria to the petroleum industry, which is the bastion of the country's economy.[54] It is common knowledge that the Nigerian economy depends on the exploitation of natural resources, especially crude oil, in the Niger Delta region of the country.[55] Though there are a few petty stealing and kidnapping for ransom of seafarers in, *inter alia*, trawlers, container vessels, bulk carriers and service vessels,[56] the *modus operandi of* Nigerian pirates is to attack oil and gas tankers, steal their cargo and sell them at the black market.[57] Consequently, a major feature of the Nigerian piracy is the target of the attacks, which is the cargo of oil and gas tankers: crude oil or refined petroleum products. Another characteristic of piracy off the coast of Nigeria is its impact on shipping and international trade in the country since Nigeria's economy depends on the importation of finished goods and the exportation of raw materials.[58]

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52 Poverty, unemployment, insecurity, among others, has led to acute food insecurity in Nigeria. This has lured many young Nigerians, especially Niger Delta youths, to criminal acts, like piracy. See 'Global Report on Food Crisis: Joint Analysis for Better Decisions' FSIN, 2020, 144-148. According to Nigeria's National Bureau of Statistics poverty report for 2019, 40.1 percent of the total population of the country is poor, which means that 'on average 4 out of 10 individuals in Nigeria has real per capita expenditures below 137,430 naira (US$ 362.186) per year'. 2019 Poverty and Inequality in Nigeria: Executive Summary, National Bureau of Statistics (NBS), May 2020, 6. See Katja L. Jacobsen 'Maritime Security and Capacity Building in the Gulf of Guinea: On Comprehensiveness, Gaps, and Security Priorities' (2017) African Security Review, DOI:10.1080/10246029.2017.1291441, 1, 5 and Marc-Antoine P. De Montclos, 'Maritime Piracy in Nigeria: Old Wine in New Bottles?' (2012) 35 Studies in Conflict & Terrorism DOI: 1080/1057619X.2012.684651, 531-541.

53 See generally, Chijioke J. Nwalozie, 'Exploring Contemporary Sea Piracy in Nigeria, the Niger Delta and the Gulf of Guinea' (2020) Journal of Transportation Security, https://doi.org/10.1007/s12198-020-00218-y and M.P. De Montclos, ibid.

54 See Kamal-Deen Ali, 'Maritime Crimes in the Gulf of Guinea: The Role of International Law' a paper presented at NIMASA/NIALS 9th Admiralty Law Seminar for Judges, 19-21 February 2020 at Raddisson Blu Anchorage Hotel, Ozumba Mbadiwe Avenue, Victoria Island, Lagos State (a copy of the paper is on file with this author); O.A. Eruaga & M. Q. Mejia Jr. (n 20) 427 and Kalu K. Anele 'A Study of the Role of Seafarers in Combating Piracy off the Coast of Nigeria' (2016) WMU J Marit Affairs, DOI 10.1007/s13437-016-0111-y.

55 'Jumpstarting Inclusive Growth: Unlocking the Productive Potential of Nigeria's People and Resource Endowments' World Bank Group, 2019, 16-17 <https://elibrary.worldbank.org/doi/pdf/10.1596/32795> accessed 9 April 2020.

56 For attacks on trawlers, see T. Nwokedi, *et al* (n 3) and A.S. Usman, *et al* (n 3). For attacks on container vessels, see Libby George, 'Pirates are Attacking Ships in Gulf of Guinea. Here's Why and the Impact' *Insurance Journal*, (San Diego, CA, 26 January 2021 <https://www.insurancejournal.com/news/international/2021/01/26/598824.htm> accessed 25 March 2021. For attacks on bulk carriers and other types of vessels, see Kamal-Deen Ali & Yussif Benning, 'Gulf of Guinea Piracy: The Old, the New and the Dark Shade' Maritime Governance Brief, 2(1) 2020, 5. And for attacks on service vessels, see 'Pirates Abduct Six Julius Berger Workers in Nigeria, Demands N600million' *Sahara Reporters* (New York, 24 March 2021) <http://saharareporters.com/2021/03/24/pirates-abduct-six-julius-berger-workers-nigeria-demand-n600million?fbclid=IwAR03DqDTsbabTBqNnsMNHps1J8jb5nuHTPgYLa1oSFu6pmBnBTMXTf_6UJA> accessed 25 March 2021.

57 See Kalu K. Anele, 'Harvest of arrest but no prosecution: ideation toward strengthening the legal regime for prosecuting pirates in Nigeria' (2020) 46(4) Common Law Bulletin, DOI:10.1080/03050718.2020.1774402, 611, 619.

58 Nana R.L. Ofosu-Boateng, 'Piracy in the Gulf of Guinea: Impacts to Maritime Transportation and Maritime Security' (2018) 4(2) Journal of Asian Development, doi:10.5296/jad.v4i2.13124, 1, 38.

In furtherance of the above, piracy in Nigerian waters is also linked to violent agitation on land. Evidence suggests that piracy in Nigeria includes resource control agitators, armed political thugs, transnational organised criminals, and militant groups in the Niger Delta region of the country.[59] Take, for example, it was observed that corrupt politicians in the Niger Delta area manipulate resource control agitators, militants, and gangsters against their political opponents, particularly during elections[60] and these criminals subsequently became pirates. On the other hand, the resource control agitators, who also morphed into militant groups, attack both onshore and offshore oil facilities, including oil and gas tankers, to express their misgivings to the exploitation of the resources and the pollution that arises from this economic activity in their communities.[61]

One of the peculiarities of piracy off the waters of Nigeria is that Nigerian pirates also attack vessels in the waters of other Gulf of Guinea countries. Thus, piracy stemming from Nigeria directly impacts neighbouring countries.[62] Moreover, the existence of transnational organised crimes, such as arms trafficking, also contribute to piracy off the waters of Nigeria and its attendant effect on the waters of other Gulf of Guinea countries.[63] It is apposite to summarise the nature of piracy off the coast of Nigeria as involving violent attacks on land which have been extended to the sea, essentially targeting oil and gas tankers for the purposes of stealing the cargo and selling them at the black market.

3.2 Piracy Legal Regime in Nigeria

Prior to 2019, there was no antipiracy legislation in Nigeria. This means that there was no piracy prosecution in the country during that aeon of time. It contributed to the escalation of the crime off the country's coast and indeed the Gulf of Guinea.[64] However, like Kenya[65], the SPOMO Act enacted by Nigeria in 2019 incorporated UNCLOS and the SUA Convention into the Nigerian domestic law. Thus, while section 3 of the SPOMO Act defined piracy in accordance with article 101 of UNCLOS, section 4 outlines the meaning of maritime offences as contained in article 3 of the SUA Convention. Specifically, section 3 of the SPOMO Act defines piracy as a violent attack on a ship by another ship on the high seas for personal gain. The enactment of the SPOMO Act, which is in contrast with the provision of article 340 (1) of the Korean CA, is a laudable step towards suppressing piracy in Nigeria as it covers the field regarding piracy attacks on ships on the high seas and armed robbery against ships in the territorial waters. Schneider suggests that the definition of piracy that includes armed robbery against a ship in the territorial waters of a coastal state could be more useful in

59 M.P. De Montclos (n 52) 534-536.

60 ibid.

61 ibid.

62 See A.S. Usman, *et al* (n 3) 398 and O.A. Eruaga & M.Q. Mejia Jr. (n 20).

63 M.P. De Montclos (n 52).

64 O.A. Eruaga & M.Q. Mejia Jr. (n 20) 449.

65 See MSA 2009, s 371.

understanding piracy, specifically, through data analysis.[66] It could be argued that Nigeria has a more comprehensive piracy legal regime compared to Korea since the SPOMO Act conforms with the international law regime of the crime. However, while Bueger argues that the existence of antipiracy legislation may not lead to its proper enforcement,[67] Adeogun-Philips opines that weak institutions, prolonged judicial procedure, lack of administrative willpower for implementation and corruption would adversely implicate on the enforcement of the SPOMO Act in Nigeria.[68]

A cursory look at the SPOMO Act reveals that aside from criminalising piracy in section 3, section 12 (1) prescribes the punishment of life imprisonment and a fine of not more than 50,000,000 million naira (US $ 130,893), including restitution to the owner or forfeiture to the Federal Government of Nigeria whatever the person has obtained or gained from the commission of the crime in Nigeria. Though there is a legitimate expectation by the international community that Nigeria should robustly enforce the SPOMO Act, it is observed that the enforcement of the Act may be a challenge due to corruption and inefficient maritime regulatory and security agencies. Also, the interpretation of the antipiracy legislation by Nigerian courts may be unsatisfactory and limited. This has been exemplified by the recent decision of a Federal High Court sitting in Port Harcourt, River State, in the first piracy case in Nigeria.[69] In that case, 3 pirates were convicted of piracy for hijacking a vessel, *MV Elobey VI*, off the coast of Equatorial Guinea and securing a ransom of US $ 200,000 for the release of its crew. The pirates were fined the sum of 20 million naira (US $ 52,000) each for the crime. This is a laudable development in the fight against piracy in Nigeria. Nonetheless, the lenient sentencing, which contradicts the provision of section 12 (1) of the SPOMO Act that stipulates life imprisonment and a fine of not more than 50 million naira will not deter other pirates from engaging in piracy in the country.

It is significant to note that the Federal High Court has exclusive jurisdiction to adjudicate piracy cases in Nigeria.[70] In a bid to strengthen the investigation and collation of evidence, section 17 (5) (a-d) of the SPOMO Act enjoins law enforcement agencies to investigate, execute search warrants, arrest, and provide evidence for the prosecution of pirates in Nigeria. Though these are commendable provisions, they do not specify the particular regulatory and enforcement agency saddled with the responsibility of implementing them. Moreover, the lack of forensic facilities and trained human resources in Nigeria would limit the efficacy of these statutory provisions in suppressing piracy in the country's waters. In view of cooperation with regional countries in suppressing piracy in Nigeria, section 17 (4) (f) of the SPOMO Act states that Nigerian law enforcement and security agencies should corporate with

66 Patricia Schneider, 'When Protest goes to Sea: Theorizing Maritime Violence by Applying Social Movement Theory to Terrorism and Piracy in the Cases of Nigeria and Somalia' (2020) Ocean Development & International Law, https://doi.org/10.1080/00908320.2020.1781383, 1, 2. Moreover, the use of piracy definition that includes both the high seas and the territorial waters stems from the safety and security threat posed by the crime. Ginger L. Denton & Jonathan R. Harris, 'The Impact of Illegal Fishing on Maritime Piracy: Evidence from West Africa' (2019) Studies in Conflict & Terrorism, DOI:10.1080/1057610X.2019.1594660, 1, 3.

67 Christian Bueger, 'Learning from Piracy: Future Challenges of Maritime Security Governance' (2015) 1 Global Affairs, 33, 40.

68 C. A. Adeogun-Phillips, (n 47).

69 See *Binaebi Johnson* (n 5).

70 The SPOMO Act, s 5(2).

West African neighbours to provide the necessary education, support, information, awareness and satisfaction towards the prevention as well as the elimination of maritime offences and other unlawful acts. In all, it is submitted that Nigeria has a comprehensive legal regime to curb piracy off its waters and it requires effective enforcement of its provisions by relevant institutions to realise its objective of taming piracy in Nigeria.

3.3 Institutional Regime for Curbing Piracy in Nigeria

Similar to Korea, Nigeria has both maritime regulatory and security agencies saddled with the responsibility of curbing piracy off the country's waters. The Nigerian Maritime Administration and Safety Agency (NIMASA)[71] and the Nigerian Navy (NN) are the main agencies responsible for the enforcement of maritime safety and security instruments, especially policing the coastline of Nigeria. Nevertheless, contrary to the regime in Korea, NIMASA and the NN lack modern equipment to maintain effective maritime domain awareness to curb piracy off the Nigerian waters.[72] Even allocated funds are misappropriated and embezzled by officials of the agencies.[73] Also, NIMASA and the NN rely on private security companies to patrol Nigerian waters and it has led to complications in terms of oversight and proper control of these private security entities.[74] This creates room for corruption and embezzlement of funds allocated for maintaining adequate maritime domain awareness in Nigerian waters. More pointedly, the disappearance of the Russian oil tanker, *MT African Pride*, from custody further exposed the level of corruption in the Nigerian maritime sector.[75]

The prosecution of pirates requires the existence of an efficient criminal justice system. Contrary to the system in Korea, the criminal justice system in Nigeria is inefficient to handle piracy prosecution due to procedural delays and the dearth of infrastructure. Lending credence to this point, the dispensation of justice in Nigeria is tardy, encourages incarceration without bail, limits access to court, engenders torture during interrogation,[76] overburdens correctional facilities and lacks necessary resources for collating and organising evidence for the effective and timely prosecution of pirates.[77]

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71 See Nigerian Maritime Administration and Safety Agency (NIMASA) Act 2007, s 3.

72 Ase G. Ostensen, *et al* 'Capacity Building for the Nigerian Navy: Eyes Wide Shut on Corruption' U4 Anti-Corruption Resource Centre, U4 Issue 2018:4, CMI, 16-20.

73 For illustrative purposes, while a former acting Director General (DG) of NIMASA has been convicted for stealing NIMASA funds, another former DG of NIMASA has been indicted for corruption. K.K. Anele, 'Addressing the Issue of Piracy off Indonesia and Nigeria' (n 4) 262-263.

74 A.G. Ostensen, *et al* (n 72) 19.

75 See the case of *Rear Admiral Francis Echie Agbiti v The Nigerian Navy* (2007) LPELR-CA/L/361/2005, (2011) 4NWLR 175. For detailed analysis of the case, see Obugheni W. Arugu & Chidi E. Halliday, 'Strengthening the Legal and Institutional Framework for Combating Piracy and Armed Robbery against Ships in Nigeria' 2018, 80 <https://www.academia.edu/39993652/STRENGTHENING_THE_LEGAL_AND_INSTITUTIONAL_FRAMEWORK_FOR_COMBATING_PIRACY_AND_ARMED_ROBERY_AGAINST_SHIPS_IN_NIGERIA> accessed 4 January 2021.

76 For details of the fundamental rights of pirates, see the 1999 Constitution of the Federal Republic of Nigeria, Part IV.

77 Osogo Ambani, *'Prosecuting Piracy in the Horn of Africa: The Case of Kenya'* in Chacha Murungu & Japhet Biegon (eds.) Prosecuting International Crimes in Africa (Pretoria University Law Press 2011) 244.

Though new laws, the Nigerian Correctional Service Act (NCSA) 2019[78] and the Administration of Justice Criminal Act (AJCA),[79] have been enacted to improve the capacity and efficiency of the administration of criminal justice in Nigeria, especially the protection of the rights of inmates, the implementation of some of their provisions remains a big challenge. Given the limitations in the criminal justice system in Nigeria, it is difficult to effectively prosecute pirates in Nigerian courts.

In light of regional cooperation, Nigeria remains the only country in West Africa that has incorporated the UNCLOS piracy legal framework in its domestic system.[80] Although several attempts have been made to tackle piracy at the regional level,[81] these attempts seem to be inadequate to tame the tide of piracy in the Gulf of Guinea, as efforts to suppress the maritime crime do not occur in all Gulf of Guinea countries.[82] Consequently, the region is the most piracy-infested route in the world.[83] More pointedly, given that Nigeria cannot adequately fund antipiracy efforts in the region, there is funding and development assistance from the international community.[84] Nevertheless, the continued piracy attacks in the Gulf of Guinea, especially off the waters of Nigeria, shows that systemic corruption, lack of infrastructure, among other things, has rendered the antipiracy assistance to the West African countries ineffectual.[85]

4. Comparative Analysis of Antipiracy Regimes in Nigeria and Korea

In determining the antipiracy model in Nigeria, the existence as well as the effective enforcement of legislation criminalising piracy is key in curbing piracy. It has been observed 'that only fixed laws regulate crime and punishment.'[86] In light of that, Korea, unlike Nigeria, has not formally incorporated antipiracy provisions of UNCLOS into its domestic law, albeit the fact that Korea's domestic law criminalises piracy.[87] Nonetheless, it is argued that the existence of legislation may not lead to its effective enforcement. Consequently, while both Korea and Nigeria have implemented the provision of article 105 of UNCLOS in prosecuting pirates,[88] the lenient sentencing prescribed by the Nigerian court would fail to deter pirates from hijacking vessels off the Nigerian coast. Also, it is observed that though

78 The NCSA, which empowers administrators to provide correctional services (custodial and non-custodial services) to inmates, repeals the Nigerian Prisons Act CAP, P29 Laws of the Federation of Nigeria (LFN) 2004 (Repeal and Re-Enactment) Act 2015 Nigeria.

79 See generally the AJCA 2015, Nigeria.

80 See the SPOMO Act. See also O.A. Eruaga & M.Q. Mejia Jnr. (n 20) 448.

81 The establishment of "Operation Pulo Shield" and "Operation Prosperity" are examples of counterpiracy initiative at the regional level in the Gulf of Guinea. More so, the adoption of the Code of Conduct for the Suppression of Piracy, Armed Robbery Against Ships and Illicit maritime Activity in West and Central Africa (Yaounde Code), among other regional security frameworks, is to repress piracy in West Africa. See O.A. Eruaga & M.Q. Mejia Jnr. ibid 432-434.

82 ibid 449.

83 See IMB Piracy Report for 2019 (n 2) 5/21.

84 See generally, A.G. Ostensen, *et al* (n 72) 1-34.

85 See ibid.

86 O.A. Eruaga & M.Q. Mejia Jnr. (n 20) 448.

87 See the CA, art 340 (1).

88 See the cases of *Araye* (n 7) and *Binaebi Johnson* (n 5) respectively.

the antipiracy legislation has been enacted in Nigeria, its enforcement will be impeded by, *inter alia*, delay in the criminal justice system, inefficient and corrupt maritime regulatory and security agencies and inadequate holding and correctional facilities.

In addition to the above, the availability of well-equipped, well-trained, and well-motivated maritime regulatory and security agencies is a significant factor in curbing piracy off the waters of Nigeria. The import of this is that adequate patrol vessels with modern communication and surveillance equipment and regular training of officials of these agencies will culminate in the enhancement of their antipiracy capabilities. Thus, Korea manufactures and purchases advanced facilities to maintain and strengthen its maritime domain awareness. This has been buttressed by the recent delivery of two KUH-1 helicopters by Korea Aerospace Industries (KAI) to KCG[89] and the acquisition of the Republic of Korea's Navy 4th Yangyang-class minesweeper *ROKS Namhae* (MSH-575) by the KN built by Kangnam Corporation shipyard.[90] In contrast to Korea, Nigeria depends on developed countries for the provision of modern surveillance equipment needed to monitor activities in the country's waters. This means that Nigeria can neither manufacture nor afford to purchase some of these facilities, in spite of its abundant natural resources. Nonetheless, Nigeria has provided automated camera-equipped surveillance towers off its coast and purchased four patrol vessels - *NNS Centenary, NNS Prosperity, NNS Okpabana* and *NNS Sagbama* - for the NN to strengthen the country's maritime domain awareness.[91] It is argued that in spite of these measures, piracy remains a thriving venture off the Nigerian coast.

Aside from having modern maritime surveillance facilities and well-equipped and well-trained coast guard and navy, Korea has also deployed its special antipiracy unit to work independently and to cooperate with the US-led multinational coalition to defend the Strait of Hormuz.[92] The implication of this is that the Korean government is keen to protect Korean vessels and seafarers who work on board vessels that ply international waters. In addition, unlike the Nigerian antipiracy efforts, the Korean antipiracy naval unit is known not only for their successes in rescue operations but also their capacity to act professionally and efficiently.[93] It is submitted that while the KN has the capability to engage in counterpiracy activities beyond the shores of Korea, the NN do not have the capacity to monitor the Nigerian waters. This has been exemplified by the extension of piracy activities by Nigerian pirates to the waters of other Gulf of Guinea countries.

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89 The availability of these surion helicopters added to the variety of advanced mission equipment to maintain maritime security in Korean waters. Shin Ji-hye, 'KAI Delivers Two Surion Helicopters to Coast Guard' *The Korea Herald*, (Seoul, 20 December 2019) <http://www.koreaherald.com/view.php?ud=20191220000535&fbclid=IwAR3gyq2sItnQUmNa8Ao0B-nYDnBfmjAZMOQsJ013KlUodAlFMZnpnTiqESXA> accessed 20 December 2019.

90 'Navy of South Korea has Launched 4th Yangyang-class Minesweeper Ship Namhae MSH – 575' *Navy Recognition* (Ramillies, 15 April 2020) <https://www.navyrecognition.com/index.php/news/defence-news/2020/april-2020/8280-navy-of-south-korea-has-launched-4th-yangyang-class-minesweeper-ship-namhae-msh-575.html?fbclid=IwAR03Rh9Pvd6x1TXyEBiK-ZYRl8fd2UUzUVAcMV-eEISroLrz_kFcZo38j9ak> accessed 16 April 2020.

91 See C.J. Nwalozie (n 53).

92 'South Korea to Deploy Anti-piracy Unit to the Strait of Hormuz' *Haaretz* (Tel Aviv, 21 January 2020 <https://www.haaretz.com/middle-east-news/south-korea-to-deploy-anti-piracy-unit-to-the-strait-of-hormuz-1.8431835> accessed 27 January 2020. See also Kim So-hyun, 'Seoul Likely to Send Troops to Strait of Hormuz' *The Korea Herald*, (Seoul, 18 December 2019) <http://www.koreaherald.com/view.php?ud=20191218000642&fbclid=IwAR1WlU_fog_SS7K-r53MpAf71_AXGKNX2r5ff-4PUNc11g0mH-lfCmjY92xI> accessed 20 December 2019.

93 T. Roehrig, 'South Korea's Counterpiracy Operations in the Gulf of Aden' (n 8) 33-38.

More so, unlike Nigeria, Korea has made significant contributions to counterpiracy activities in the world notwithstanding that piracy indirectly affects Korea through attacks against Korean owned and flagged vessels, Korean cargo or seafarers in vessels flying other countries' flags and vessels trading with Korean ports. This arises due to the existence of competent maritime security agency, availability of naval ships with modern communication and surveillance equipment, and the support of the Korean government. For example, Korea participated in the US-led CTF-151 to conduct antipiracy operations in the Indian Ocean and the Gulf of Aden. The implication is that Korea has a well-trained, well-equipped and well-motivated navy capable of adequately protecting the country's coast, in addition to being competent to participate in joint naval operations in piracy hotspots in the world. Although Nigeria has participated in both regional and global antipiracy training programmes,[94] the NN is still ill-equipped and ill-trained to monitor the activities of pirates in the country's expansive territorial waters. More importantly, despite the economic and strategic importance of the maritime sector in Nigeria and the Gulf of Guinea,[95] Nigeria cannot, *suo motu*, organise counterpiracy activities in West Africa.

In furtherance of the above, the government of Korea has implemented the International Maritime Organisation's (IMO) e-navigation initiative and other relevant guidelines[96] in the country's shipping industry.[97] Using the existing shore-based resources with broad connections between ship and shore in Korea, the Korean maritime industry remotely monitors the movement of vessels in Korean waters and beyond by using broadband communication.[98] The e-navigation strategy enhances maritime domain awareness of Korea, helps to monitor the position of vessels and contributes to reducing piratical acts through swift response to piracy threat. Though Nigeria installed automated camera-equipped surveillance towers in its littoral zone, infrastructure limitations remain significant in the country's maritime sector. Thus, it is concluded that Nigeria is yet to adequately implement the e-navigation initiative of IMO in its maritime sector.

It is incontrovertible that funding plays a significant role in counterpiracy operations. Funds are needed to procure modern communication and surveillance facilities and patrol vessels, to train officials of maritime regulatory and security agencies, to support antipiracy operations, and send the navy to monitor the country's waters. Thus, aside from being one of the biggest contributors to the Multi-Donor

94 See generally, A.G. Ostensen, *et al* (n 72). See also See O.A. Eruaga & M.Q. Mejia Jnr. (n 20) 432-434.

95 Nigeria imports finished products and exports raw materials and these activities make the maritime industry very crucial to the economy of the country. More so, fishing is a very important maritime activity in the country.

96 For example, the Voluntary IMO Member State Audit Scheme (VIMSAS) is a mechanism in which a Member State audits itself in relation to the implementation of IMO regulations and guidelines, especially in view of the safety and security of vessels. Korea successfully complied with VIMSAS in 2007 and the country was expected to be audited again in 2020. Sang Ho Kim, 'Development of Key Performance Indicators (KPIs) for IMO Member States in the Context of the IMO Member State Audit Scheme' a dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of Master of Science in Maritime Affairs (Maritime Safety and Environment Administration) 2017, 27.

97 'The Korean E-navigation Project "SMART-Navigation": For Wider Connections between Ship and Shore in Korean Waters' SMART-Navigation Project Office, 29th November 2017, 22 <https://cdn2.hubspot.net/hubfs/3476751/Smart%20Operations%20Asia/Speaker%20Presentations/Jin%20Hyoung%20Park,%20Korean%20Ministry%20of%20Oceans%20SMART%20Nav%20Project%20(Smart%20Port%20session).pdf?t=1513357851904> accessed 4 April 2020.

98 ibid.

Anti-Piracy Trust Fund, which focused on land-based counterpiracy strategies in Somalia, Korea is a key participant and contributor to the Regional Cooperation Agreement on Combatting Piracy and Armed Robbery against Ships in Asia (ReCAAP).[99] By contrast, Nigeria still depends on external funding for its counterpiracy efforts both at the domestic and regional levels and these streams of support have been marred by corruption and inadequate facilities.[100] Even when the government of Nigeria, through its maritime agencies, funds antipiracy activities, corruption, among others, may affect such initiatives. For instance, the Integrated National Security and Waterways Protection Infrastructure Project (Deep Blue Project) initiated by NIMASA, which is designed to enhance effective maritime domain awareness in Nigeria,[101] has played little or no role in curbing piracy off the country's coast, as the country's coast remains risky for navigation.

The prosecution of pirates in both countries demonstrates the stark difference between the antipiracy efforts of Korea and Nigeria. Despite the fact that Nigeria has a more comprehensive piracy legal regime compared to Korea, Korea has been able to use its extant laws to prosecute pirates by simply applying the provisions of its laws. In *Araye's* case,[102] the Korean Supreme Court affirmed the decision of the lower court prescribing maximum punishments contained in the legislation: life imprisonment or not less than 7 years imprisonment.[103] In contradistinction to the experience in Korea, the Federal High Court in Nigeria prescribed a very lenient punishment of 20 million naira fine to each of the three pirates[104] instead of life imprisonment and a fine of not more than 50 million naira stipulated by law. While this sentence will not deter the Nigerian pirates, it also supports the argument that the enactment of antipiracy law does not lead to its proper implementation. Moreover, it has been alleged that the purported prosecution of pirates in Nigeria only targeted employees of a private company engaged in handing over the ransom money to pirates.[105]

Above all, unlike Korea, a democratic government that has cultivated the political will to curb piracy, Nigeria may be regarded as a weak and corrupt state that practices anocracy which contributes to the country's inability to effectively combat piracy, particularly in addressing the onshore causes of the crime. Buttressing this point, Denton and Harris argue that 'while democracies are less likely to encounter pirates attack than autocracies, anocracies experience more maritime piracy.'[106] More so, despite the acquisition of modern surveillance facilities and combat vessels by the Nigerian regulatory

99 B.L. Coggins & J.J. Kim (n 13) 2.

100 See A.G. Ostensen, *et al* (n 72).

101 'Navy's Support for the Maritime DEEP Blue Project' *Dryad Global* (London, 23 November 2020) <https://channel16.dryadglobal.com/navys-support-for-the-maritime-deep-blue-project> accessed 13 January 2021.

102 *Araye* (n 7).

103 See CA, art 340 (1).

104 See *Binaebi Johnson* (n 5).

105 Godwin Oritse, "Nigeria needs Private Security on Vessels to Tackle Piracy-Report", *Vanguard* (Lagos, 26 February 2021) <https://www.vanguardngr.com/2021/02/nigeria-needs-private-security-on-vessels-to-tackle-piracy-report> accessed 8 April 2021.

106 Ginger L. Denton & Jonathan R. Harris 'Maritime Piracy, Military Capacity, and Institutions in the Gulf of Guinea' (2019) Terrorism and Political Violence DOI:10.1080/09546553.2019.1659783, 1, 2.

and enforcement agencies, piracy has continued to thrive off the waters of the country. These agencies cannot repress piracy because they may be loyal to the leader in power rather than the institution and they also lack professionalism as they engage in corrupt practices in their operations.[107]

5. Curbing Piracy off the Coast of Nigeria: Lessons from Korea

Enacting domestic legislation that incorporates the antipiracy provisions of UNCLOS is one of the steps towards curbing piracy. While the incorporation of antipiracy provisions of UNCLOS into Korean local law is yet to be done,[108] Korea has appropriately used its domestic legislation to prosecute pirates, which is commendable. In view of that, it is imperative for Nigeria to go beyond enacting an antipiracy law by robustly enforcing the SPOMO Act in suppressing piracy off its waters. This can be achieved by training Nigerian judges on how to adjudicate piracy cases brought before them.[109] Such training would be necessary to interpret the provisions of the Act that are inchoate, like section 17 (5) that did not specify the law enforcement agencies to enforce the Act, and obviate prescribing lenient punishment for pirates as witnessed in the first piracy case in Nigeria.[110] In addition, it is imperative for the criminal justice system in Nigeria to be efficient and effective to accommodate piracy cases, particularly in terms of reduction in delays before and during hearings, adequate court and holding facilities, and training of the officials.

Aside from the extant antipiracy legal regime, it is imperative to have efficient, well-equipped, well-trained and well-motivated maritime regulatory and security agencies to suppress piracy. Lending credence to the significant role regulatory and security agencies play in counterpiracy activities, the existing institutional framework in Korea - which has culminated in maritime domain awareness in the country - shows the positive impact a well-trained, well-equipped, well-motivated and efficient coast guard and navy has for piracy prevention. Moreover, the Nigerian government should learn from its Korean counterpart[111] the importance of introducing and rigorously implementing policies and programmes designed to create effective and efficient naval capabilities. In light of that, the ongoing collaboration between NIMASA and the NN, through the Command, Control, Communication, Computer, and Intelligence Centre (C4I) of the Deep Blue Project, including the NN's "Falcon Eyes" that trails pirates in operation, should be strengthened and sustained.[112]

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107 ibid. See the case of *Agbiti* (n 75).

108 The court, in the case of *Araye* (n 7), held that article 6 of the Korean Constitution permits the application of universal jurisdiction contained in article 105 of UNCLOS.

109 In view of that, the NIMSAS-NIALS 9th Admiralty Law Seminar for Judges, which took place on the 19th-21st February 2020 at Raddisson Blu Anchorage Hotel, Ozumba Mbadiwe Avenue, Victoria Island, Lagos State, is a step in the right direction. It behooves the judges to implement the recommendations maritime security experts proffered in their presentations.

110 See the case of *Binaebi Johnson* (n 5).

111 In March 2001, President Kim Dae-jung declared that the country would pursue the development of a blue-water navy with a "strategic mobile fleet that protects state interests in the five big oceans and plays a role of keeping peace in the world". This programme was continued by subsequent administrations in Korea, which led to the building and commissioning of the fleet of DDH-II destroyers, the Chungmugong Yi Sunshin-class ships. T. Roehrig, 'South Korea's Counterpiracy Operations in the Gulf of Aden' (n 8) 31-33.

112 C.J. Nwalozie (n 53).

Given the fact that antipiracy activities require extensive logistics, in terms of, *inter alia*, procurement of modern surveillance and communication facilities, and training of judicial officers and officials of maritime regulatory and security agencies, adequate funding becomes inevitable. Consequently, the government of Nigeria should, like its Korean counterpart, adequately fund counterpiracy activities off the Nigerian coast. Particularly, sufficient funds should be allocated to procuring communication and surveillance equipment and patrol vessels for the regulatory and security agencies and training of judicial officers, among other things. It is common knowledge that Nigeria has abundant natural resources and the proceeds of the exploitation and sale of these resources should be used to procure some of these modern facilities needed in the maritime sector. Beyond procuring these facilities, it is important that the officials of these maritime regulatory and security agencies are regularly trained to use them.

Though piratical acts do not occur off the coast of Korea, the government of Korea has continued to play a key role in establishing regional antipiracy operations, soft laws, and funds to curb piracy in Asia. On the other hand, despite Nigerian pirates' extension of their attacks to the waters of other Gulf of Guinea countries, Nigeria has no capability to monitor its coastline and lacks the capacity to support regional antipiracy operations. Consequently, Nigeria should procure sophisticated communication and surveillance equipment and patrol vessels for NIMASA and the NN and train their officials to use the equipment. Also, Nigeria should contribute to funding of regional antipiracy programmes. Such funding will be used to acquire sufficient patrol vessels, helicopters, and modern combat ships for regional patrol teams to be able to monitor activities in Nigerian waters and the Gulf of Guinea. The significance of having a well-trained regional antipiracy naval group with modern patrol boats and combat vessels in West Africa as part of the region's antipiracy drive has been given a fillip by the recent attack of a Portuguese flagged container ship, *Tommi Ritscher,* in the Gulf of Guinea.[113] Though the deployment of Nigerian Naval Special Boat with personnel to arrest the situation is laudable,[114] this piracy incident would not have occurred if West African countries had adequate maritime domain awareness strengthened by well-equipped navies.

More importantly, since Nigerian piracy is largely linked to land-based activities, it is imperative that these onshore root causes of piracy in the country should be adequately addressed. Among other onshore causes of piracy in Nigeria, Hastings observes that pirates that hijack oil tankers in the Gulf of Guinea rely on 'access to formal economic infrastructure associated with the oil industry, and acquiescence or buy-in from elites with ties to that infrastructure.'[115] These corrupt elites should be arrested and prosecuted. It is important to note that aside from adequate maritime domain awareness in its coastline, Korea has reduced unemployment, curbed poverty, maintained hitch-free political activities and reined in on corruption in the country. This implies that while piratical acts may not occur off its coast due to its adequate surveillance, there are no onshore factors that could encourage Koreans to be pirates.

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113 '8 Crew Members Kidnapped by Pirates on Board Container Ship in Gulf of Guinea' *Marine Insight*, (Bangalore, 20 April 2020) <https://www.marineinsight.com/shipping-news/8-crew-members-kidnapped-by-pirates-on-board-container-ship-in-gulf-of-guinea/> accessed 21 April 2020.

114 ibid.

115 Justin V. Hastings, 'The Return of Sophisticated Maritime Piracy to Southeast Asia' (2020) 93(1) Pacific Affairs DOI: 10.5509/20209315, 5, 12. See also C.J. Nwalozie (n 53).

In view of that, it is imperative for Nigeria to address the onshore causes of piracy in the country. For instance, poverty, violent political activities, unemployment, resource control agitation, pollution of the environment due to oil exploration, and corruption should be rooted out of the country.[116]

Thus, it is imperative for the Nigerian government to engender good governance in the country. This implies introducing economic policies that will create employment opportunities, continuing the ongoing policy to educate and engage the Niger Delta people, adequately protecting oil facilities, especially oil and gas pipelines, and implementing measures to reduce pollution of the communities in the Niger Delta. More pointedly, like Korea, it is equally imperative for the government of Nigeria to cultivate the political will to prosecute pirates and their enablers (those that finance piracy as well as corrupt government officials and officials of maritime regulatory and security agencies) in its local courts to signal the end of the tolerance of piracy off the waters of the country.

Due to the lack of capacity by Nigeria to suppress piracy off its waters, it is imperative for the international community and maritime organisations to continue their support in providing funds and training of the officials of NIMASA and the NN in curbing piracy in the country. To strengthen these supports, it has been suggested that measures, like assessing corruption risks and developing mitigation plans, providing integrated antipiracy training to partners, and monitoring the assistance and safeguarding against abuse should be adopted by the government of Nigeria to curb corruption in the antipiracy efforts in the country.[117] The shipping industry should cooperate with Nigeria in combating piracy by using well-equipped vessels, engaging well trained seafarers, regularly complying with IMO security regulations and guidelines, always utilising seaworthy vessels, regularly communicating and exchanging information with NIMASA in its operations, and supporting antipiracy law enforcement by maritime regulatory and security agencies in Nigeria.[118] More pointedly, there should be regular cooperation among the maritime regulatory and security agencies in the Gulf of Guinea, especially in the purview of information sharing, to decisively repress piracy off the coast of Nigeria.

6. Conclusion

This research has shown that piracy has continued to be a big challenge to Nigeria, as the country's coastline has become the most dangerous navigational route in the world. Piracy has economic, socio-political and humanitarian effects on Nigeria. Therefore, it is imperative to suggest ways to curb piracy off the country's coast. Nigeria has taken laudable steps in its counterpiracy efforts by enacting antipiracy legislation and prosecuting pirates in its court. Nonetheless, piracy has continued unabated off the country's waters. This paper comparatively analysed piracy regimes in Nigeria and Korea and

116 It has been argued that institutionally strong and democratic regimes are less likely to experience piracy as many of the onshore causes of the crime, like political violence, do not arise. See G.L. Denton & J.R. Harris 'Maritime Piracy, Military Capacity, and Institutions in the Gulf of Guinea' (n 106) 2.

117 A.G. Ostensen, *et al* (n 72) 31-33.

118 For more information on ways the shipping industry and other relevant stakeholders can support the antipiracy regime in Nigeria, see generally, "The Gulf of Guinea Declaration on Suppression of Piracy" <https://www.bimco.org/GoGDeclaration> accessed 19 May 2021.

argued that similar to Korea, Nigeria should, *inter alia*, effectively enforce its antipiracy legislation, adequately fund its maritime regulatory and security agencies, and address the onshore causes of piracy and prosecute government officials, employees of shipping companies and clearing agents that aid and abet pirates. Besides, it is important for the government of Nigeria to address the issue of land-based causes of piracy in the country, such as unemployment, poverty, corruption and political violence. Given the significant role the maritime industry plays in the development of Nigeria in terms of the economy, security and lives of seafarers, it becomes imperative for the Nigerian government to introduce and implement the recommendations suggested above, like training and equipping the officials of the maritime regulatory and security agencies, enforcing antipiracy instruments and prosecuting pirates in the country's courts. In addition, an efficient criminal justice system is a *conditio sine qua non* in the quest to curb piracy in Nigeria, particularly through the prosecution of pirates and their enablers. In light of that, the Nigerian government must cultivate the political will to suppress piracy in the country.

Maritime Safety and Security Law Journal

COLREGs and Autonomous Vessels: Legal and Ethical Concerns under Canadian Law

*Marel KATSIVELA**

Abstract

The present study focuses on legal and ethical questions raised with respect to autonomous – more specifically remotely controlled and fully autonomous – vessels and COLREGs under Canadian law. The legal questions revolve around issues such as whether an autonomous vessel may be qualified as a vessel under COLREGs and whether an autonomous vessel can abide by the COLREGs look-out (Rules 5) and good seamanship (Rule 2) requirements. It concludes that although the look-out and good seamanship requirements could be performed by remotely controlled vessels without making major changes to the existing rules, for fully autonomous vessels, decision making under Rule 5 (proper look-out) and Rule 2 (good seamanship) cannot be viewed, at this stage, as conforming with COLREGs. The legal issues examined under COLREGs and the solutions we provide to them reflect ethical concerns raised by autonomous vessels and the degree to which we trust AI in shipping. This study identifies the need for ethical principles to govern autonomous vessels and provides some direction in developing these principles.

Keywords: COLREGs, autonomous vessels, unmanned vessels, Canada, ethics, legal, artificial intelligence

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1. Introduction

For the first time, the possibility exists for ships to navigate the globe with no one at the helm.[1] Autonomous[2] ships are defined as ships which, to a varying degree, can operate independently of

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1 Paul W Pritchett, 'Ghost Ships: Why the Law Should Embrace Unmanned Vessel Technology' (2015) 40 Tulane Maritime Law Journal 197, 199.

2 *Autonomous* means, in Greek, 'existing or capable of existing independently' Merriam Webster Dictionary <www.merriam-webster.com/dictionary/autonomous> accessed 8 January 2021. Another acronym used for autonomous vessels by the IMO is Maritime Autonomous Surface Ships (MASS).

human interaction.[3] The presence of ships without crew on board can be traced back to ancient Greece.[4] Autonomous ships today are being configured to operate via remote control, autonomous means or a combination of the two methods.[5]

Autonomous vessels present different levels of automation.[6] Level one involves ships with automated processes and decision support where seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised but with seafarers on board ready to take control. Level two, by contrast, encompasses remotely controlled ships with seafarers on board where the ship is controlled and operated from another location. Seafarers are available on board to take control and to operate the shipboard systems and functions. Level three of vessel automation concerns remotely controlled ships without seafarers on board where the ship is controlled and operated from another location by remote controlled mechanisms, that is by a shore based human operator.[7] There are no seafarers on board. Finally, level four refers to fully autonomous ships in which the operating system of the vessel is able to make decisions and determine actions by itself.

This article focuses on remotely controlled ships without crew on board and fully autonomous ships (levels three and four) since these levels of autonomation appear to raise significant legal and also ethical issues. Robot ethics refer to the practical challenge of building robots which explicitly engage in making moral decisions.[8] Indeed, for levels of automation one and two involving human presence on board the current rules may remain largely unchanged.

Automation in shipping is possible due to the presence of sensors on board, cameras, radars, algorithms and software that interpret data and propose appropriate actions as well as the shore control centre[9] that will play an important role in the navigation of the ship. In the case of remotely controlled vessels, sensors on board feed information to a human operator not located on the vessel who evaluates the relayed

3 Maritime Safety Committee, 'Annex - Framework for the Regulatory Exercise' (6 December 2018) IMO Doc MSC 100/WP.8, para 3.

4 The ancient Greek engineer Archytas is regarded as having invented the first UAV, a mechanical pigeon, in the 4th Century BC. The Greeks and Chinese also used UAVs to send unmanned ships that were on fire into naval battles. Rehfuss Abigail, 'The Domestic Use of Drones and the Fourth Amendment' (2015) 8 Albany Government Law Review 313, 317 note 16 of this article citing other authors; see also Erich Grome, Spectres of the Sea: The United States Navy's Autonomous Ghost Fleet, its Capabilities and Impacts, and the Legal Ethical Issues that Surround' (2008) 49 Journal of Maritime Law and Commerce 31, 37. The technology used in ancient times was, of course, different from that used today.

5 Pritchett (n 1) 199.

6 For the following see IMO Doc MSC 100/WP.8, para 4.

7 IMO Doc MSC 100/WP.8, para 4 for this and all four levels of automation.

8 Wendell Wallach, 'The Challenge of Moral Machines' (*Philosophy Now,* 2009) <https://philosophynow.org/issues/72/The_Challenge_of_Moral_Machines> accessed 19 April 2021. Ethos means 'custom' or 'character' in Greek. As originally used by Aristotle, it referred to a man's character or personality, especially in its balance between passion and caution. Today, *ethos* is used to refer to the practices or values that distinguish one person, organization, or society from others. Merriam Webster, 'Ethos' *(Merriam Webster)* <www.merriam-webster.com/dictionary/ethos> accessed 8 January 2021. In the present study, the term 'autonomous' vessels or ships will refer to levels three and four of vessel autonomy as herein described.

9 T. Karlis, 'Maritime Law Issues related to the Operation of Unmanned Autonomous Cargo Ships' (2018) 17 World Maritime University Journal of Maritime Affairs 119, 121.

information and sends commands back to the vessel.[10] These commands are then carried out through its electronic systems. In the case of a fully autonomous vessel, information is collected from the various sensors and sent to an onboard computer that evaluates the information and issues commands to the engines, rudders, and other navigational and cargo care components with no human input.[11]

Such vessels have a variety of potential uses: they may be used for the transport of goods and passengers, scientific marine research, the maintenance/repair of oil platforms, pipelines, ships and ports, laying submarine cables, surveillance, espionage, border patrol, and detection of smuggling and of narcotics.[12] In the area of merchant shipping – the focus of the present study - Japanese shipping firms and shipbuilders are currently working to develop self-piloting cargo ships while a Norwegian project completed the world's first electrically powered autonomous container ship (the *YARA Birkeland*) in November 2020.[13] Chinese companies have also launched autonomous cargo ships in recent years and there are predictions that China will be leading the autonomous shipping market by 2025.[14]

Such vessels have numerous advantages. First, as human error accounts for more than 70% of all marine casualties,[15] automation in shipping has a beneficial effect in reducing the number of accidents at sea.[16] Second, cost-effectiveness is achieved since the costs of maintaining a crew on board, their accommodation and wages are eliminated, leading at the same time to vessels that weigh less, have more stowage space for cargo and consume less fuel.[17] Finally, considering that there is a declining interest in seafaring careers and a consequent shortage of seafarers, autonomous vessels will not be technologies of passing interest.[18]

The autonomous operation of ships raises, however, broad security and ethical concerns by introducing

10 Pritchett (n 1) 199.

11 ibid 199 who also notes that in this case a communication link between the vessel and a monitoring or command center will likely be a part of this system so that information can be uploaded to the vessel as necessary. The author further notes that a hybrid (remotely operated and completely autonomous system) is also possible and likely to be dominant, at least in the early stages of MASS, because it can eliminate many of the shortcomings.

12 Eric Van Hooydonk, 'The Law of Unmanned Merchant Shipping – An Exploration' (2014) 20 Journal of International Maritime Law 403, 404.

13 Paul Dean, Tom Walters, Jonathan Goulding, Henry Clack, 'Autonomous ships – MASS Mutations' (*Holman, Fenwick Willan*) <www.hfw.com/Autonomous-Ships-MASS-Mutations-Feb-2021> accessed 19 April 2021.

14 Martyn Wingrove, 'China Will Lead US$1.5Bn Autonomous Shipping Market by 2025' (*Riviera*) <www.rivieramm.com/news-content-hub/news-content-hub/china-will-lead-us15bn-autonomous-shipping-market-by-2025-58960> accessed 19 April 2021.

15 Pritchett (n 1) 201. Council of Canadian Academies, 'Commercial Marine Shipping Accidents: Understanding the Risks in Canada' (Council of Canadian Academies, 2016) <https://cca-reports.ca/wp-content/uploads/2018/10/cca_marine_shipping_risks_en_fullreport.pdf> accessed 8 January 2021.

16 Wróbel Krzysztof, Montewka Jakub and Kujala Pentti. 'Towards the assessment of potential impact of unmanned vessels on maritime transportation safety' (2017) 165 Reliability Engineering and System Safety 155, 163.

17 Pritchett (n 1) 201.

18 Aldo Chircop, 'Testing International Legal Regimes: The Advent of Automated Commercial Vessels' (2018) 60(1) German Yearbook of International Law 1, 4.

certain risks. First, electronically operated devices may malfunction, present defects or be hacked.[19] Electronic devices and artificial intelligence (AI)[20] used by autonomous vessels might, therefore, be detrimental. At the same time, while autonomous vessels may prevent accidents, counteracting damage produced following the accident (fire, environmental damage, flooding, and damage to the cargo) tends to be more effective if a crew is on board.[21] Second, the implementation of autonomous vessels will probably result in a loss of employment. Unions representing personnel working on board have reacted with skepticism regarding autonomous vessel safety and cost-effectiveness.[22] It is also argued that there is no shortage of individuals who are willing to work at sea but a shortage of individuals who are willing to work in the conditions that are currently prevalent in many parts of the industry. [23] Third, if the delegation of tasks to AI is based on artificially induced blind trust in the name of growth and prosperity, such delegation is not only imprudent but also morally problematic.[24] Considering these factors, one cannot but wonder whether the substitution of artificial intelligence for human judgment is socially acceptable.[25]

Automation in shipping requires adapted regulations and policies to govern it. Even though shipping in Canada and worldwide is heavily regulated, the existing rules either do not address or only partially address new technologies. The International Maritime Organization (IMO), responsible for regulating many aspects of the maritime activity at the international level, is currently undertaking a scoping exercise in order to determine which IMO legal instruments would apply or not to autonomous vessels and to what extent these instruments would require amendments or whether a new instrument to govern autonomous vessels would be necessary.[26] The scoping exercise

19 David Dubay 'Why we will Never See Fully Autonomous Commercial Ships' (*Center of International Maritime Security, 2019*) <http://cimsec.org/why-we-will-never-see-fully-autonomous-commercial-ships/40652> accessed 8 January 2020.

20 AI is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. 'Artificial Intelligence' (*Britannica*, 2019) <www.britannica.com/technology/artificial-intelligence> accessed 8 January 2021.

21 Wróbel, Montewka and, Kujala, (n 16) 164.

22 Hamburg School of Business Administration, 'Seafarers and Digital Disruption' (*International Chamber of Shipping,* 2018) <www.ics-shipping.org/wp-content/uploads/2020/08/ics-study-on-seafarers-and-digital-disruption-min.pdf> accessed 8 January 2021.

23 The Royal Institution of Naval Architects, 'Autonomous vessels: the Union's View' (*Royal Institution of Naval Architects,* 2017) <www.rina.org.uk/unionview.html> accessed 8 January 2021.

24 Ian Kerr, 'Bots, Babes and the Californication of Commerce' (2004) 1 University of Ottawa Law and Technology Journal 285, 314; W. Hartzog, 'Unfair and Deceptive Robots' (2015) 74 Maryland Law Review 785, 787-788;Rahwan Iyad, 'Society-in-the-Loop: Programming the Algorithmic Social Contract' (2018) 20(1) Ethics and Information Technology 1, 7; Bostrom Nick and Yudkowsky Eliezer, 'The Ethics of Artificial Intelligence' (2014) in William Ramsey and Keith Frankish (eds) *Handbook of Artificial Intelligence* (Cambridge University Press 2014) 317, 329-333.

25 Chircop (n 18) 34

26 On the commitment of the IMO Maritime Safety Committee, the Legal Committee and the Facilitation committee to undertake the scoping exercise its framework and methodology see IMO Doc MSC 100/WP.8 (para 1, 2 for the MSC). IMO, 'MASS List of Instruments under the Purview of the Legal Committee' (4 January 2019) IMO Doc LEG 106/8 (para 1, 2 for the Legal Committee), IMO, 'Report of the Legal Committee on the work of its 105th session' IMO Doc LEG 105/14, para 11.8, IMO, 'MASS' (4 February 2020) IMO Doc FAL 44/14/1 (para 1-11 for the Facilitation Committee). IMO, 'Autonomous Shipping: Why has IMO decided to look at the regulation of autonomous ships?' <www.imo.org/en/MediaCentre/HotTopics/Pages/Autonomous-shipping.aspx> for MSC, LEG and FAL.

was due to complete in 2020.[27] However, due to the coronavirus (Covid-19) pandemic the relevant IMO meetings were first postponed and then resumed in late 2020 and continue in 2021.[28]

The scoping exercise has identified a number of international rules that may require revision.[29] Among them appears the 1972 Convention on the International Regulations Preventing Collisions at Sea (COLREGs)[30], an international set of rules elaborated by the IMO and regulating collisions at sea.

The question raised by the present study is whether specific COLREGs provisions, notably Rule 5 regarding proper look out, Rule 2 on the requirement of good seamanship, Rules 3(a) regarding the definition of a vessel and its Canadian modification, apply to autonomous vessels. These questions relate to legal issues raised under COLREGs with respect to autonomous vessels. The study also raises ethical [31]questions present by the application of some of the mentioned COLREGs provisions to autonomous ships and examines the manner in which they may be addressed in the future. For example, the study reflects on whether regulation promoting ethics may be introduced in autonomous vessels promoting morally acceptable solutions. The focus of the present study is on Canadian law. However, the issues the COLREGs raise under Canadian law[32] are similar to those arising in other jurisdictions. As a result, the present study is of interest at both the Canadian and international levels. The study focuses on autonomy levels three and four (remotely controlled vessels with no crew on board or fully autonomous vessels) since for these vessels the legal and ethical questions become more obvious.

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27 On the methodology of the regulatory scoping exercise see IMO Doc MSC 100/WP.8, paras 9-10, IMO, 'Report of the Legal Committee on the Work of its 106th session' (13 May 2019) LEG 106/16, para 8. IMO Doc FAL 44/14/1 para-1-11. IMO, 'Autonomous Shipping' (2019) <www.imo.org/en/MediaCentre/HotTopics/Pages/Autonomous-shipping.aspx> accessed 8 January 2021 for the intended date of revision.

28 For a list of documents requiring revision see IMO, 'Provisional Agenda for the 108th session of the Legal Committee to be held remotely from 26 to 30 July 2021' (15 December 2020) IMO Doc LEG 108/1, item 7. IMO, 'Provisional agenda for the 103rd session of the Maritime Safety Committee, to be held remotely from Wednesday, 5 May, to Friday, 14 May 2021' (27 November 2020) IMO Doc MSC 103/1, item 5.

29 IMO 'MASS' (10 January 2020) IMO Doc 107/8/17 Annex 2. IMO, 'Report of the Intersessional Working Group on Maritime Autonomous Surface Ships' (25 September 2019) IMO Doc MSC 102/5/3 also noting (para 3.63-367) that COLREGs are currently under the second step of the regulatory exercise.
International Regulations Preventing Collisions at Sea (COLREGs) (adopted 20 October 1972, entered into force 15 July 1977) 1050 UNTS 16 (COLREGs).

30 International Regulations Preventing Collisions at Sea (COLREGs) (adopted 20 October 1972, entered into force 15 July 1977) 1050 UNTS 16 (COLREGs).

31 In order to accurately model the ethical issues regarding autonomous vessels, we will draw on a method used in bioethics, science, and technology: 'moral proxies'. This method is based on the premise that artefacts can function as moral proxies and provide material answers to moral questions. The use of moral proxies allows importing traits associated with human relationships to the machine-human context. On this discussion in general see J. Millar, 'Technology as Moral Proxy: Autonomy and Paternalism By Design' (2015) 34 (2) IEEE Technology and Society Magazine 47 48. If, for example, MASS is designed to make a decision in shipping such as avoiding a collision at sea, questions are raised as to how ethical and morally acceptable the decisions made by MASS in such a context may be.

32 The Canadian government is actively participating to the international work (submissions and discussions) undertaken by the IMO on autonomous vessels. In April 2019, the Government of Canada also launched the Canadian Forum for Maritime Autonomous Surface Ships (CFMASS) to establish a network of stakeholders to help guide the development of MASS technology in Canada for the benefit of Canadians. National Research Council of Canada (Workshop Presentation), 'The Canadian Forum for Maritime Autonomous Surface Ships (MASS): Sub-Committee on Test/Research and Development' (November 2019) <http://cismart.ca/wp-content/uploads/2019/12/CFMASS-SubCom-TRD-v3-Fraser-Winsor.pdf> accessed 8 January 2021.

This article proceeds as follows: in section 2, it analyses legal questions raised under Canadian law by key COLREGs provisions with respect to autonomous vessels. In Section 3, it extends its focus on ethical questions raised in this context of autonomous vessels and COLREGs.

2. Legal questions raised under Canadian law by key COLREGs provisions with respect to autonomous vessels

The COLREGs set out navigational rules currently in use throughout the world.[33] Its provisions notably focus on safe speed, signals, lights and rules on priorities for different types of vessels in different situations. [34] They cover both situation awareness (including lookout, lights and sound signal appliances on board the vessel) and operational decision-making in cases of collision avoidance (such as speed or priorities). [35] Their object and purpose is to prevent collisions[36] which, in Canada and worldwide, continue to feature prominently as a marine casualty.[37]

The COLREGs are widely ratified and, therefore widely and successfully applicable worldwide.[38] Canada has incorporated them into national law with the adoption of the Collision Regulations (CR), which apply to every Canadian vessel located within any waters.[39] However, Canada's implementing rules make some modifications.[40] These Regulations apply to every Canadian vessel located within any waters as well as every pleasure craft and foreign vessel located in Canadian waters and every seaplane on or over Canadian waters.[41] The Canadian modifications are important because they modify for example the definition of the vessel under Rules 3(a) COLREGs – a provision examined below.[42]

Under Rule 3(a) 'the word 'vessel' includes every description of water craft, including non-displacement craft, WIG [Wing-In-Ground] craft[43] and seaplanes, used or capable of being used as

33 Aldo Chircop and others, *Canadian Maritime Law* (2nd edn, Irwin Law 2016) 826-827.

34 ibid 827-832.

35 ibid.

36 Craig H. Allen, 'Taking Narrow Channel Collision Prevention Seriously to more Effectively Manage Marine Transportation System Risk' (2010) 41 Journal of Maritime Law and Commerce 1, 40.

37 Chircop, and others (n 33) 824-825 for Canada. Gouvernement du Canada, Événements de Transport Maritime en 2018 (2018) <www.bst-tsb.gc.ca/fra/stats/marine/2018/ssem-ssmo-2018.html> accessed 8 January 2021.

38 United Nations, 'Convention on the International Regulations for Preventing Collisions at Sea, 1972' <https://treaties.un.org/pages/showDetails.aspx?objid=08000002800fcf87> accessed 8 January 2021.

39 Collision Regulations, C.R.C., c. 1416 art 3.

40 Collision Regulations, C.R.C., c. 1416.

41 ibid art 3.

42 Other Canadian modifications to COLREGs include modifications to the light and sound signals required for various sized vessels in different weather conditions and those that specifically apply to the Great Lakes. Nautical Mind, 'Collision Regulations, and the Canadian Modifications' (2018) <www.nauticalmind.com/blog/2018/11/collision-regulations-and-the-canadian-modifications/> accessed 8 January 2021. In case of conflict between the Canadian modifications and COLREGs, the former prevails over the latter (CR art 3.3).

43 IMO 'Wing-In-Ground (WIG) Craft' (2018) <www.imo.org/en/OurWork/Safety/Pages/WIG.aspx.> accessed 8 January 2021.

a means of transportation on water'. Following this definition, Canadian case law[44] and doctrine, there does not seem to be a requirement for transporting someone or something deemed as 'separate' from the vessel.[45] In other words, autonomous ships represent no special category of ships according to COLREGs.[46] This is also supported by the fact that the COLREGs definition is designed to cast the broadest possible scope of application, for the very sound reason that the larger the pool of craft upon the sea to which they apply, the easier it is to predict their ship handling and navigational conduct, and thus to prevent collision between them.[47]

Following the Canadian modification of the definition of a vessel provided for by Rule 3(n) of the Collision Regulations, the above-mentioned vessel definition does not apply regarding collisions.[48]This is so because the Canadian Collision Regulations were adopted under the 2001 Canada Shipping Act (CSA)[49] and, consequently, they follow the CSA definition of a vessel. Article 2 CSA defines a vessel as: 'a boat, ship or craft designed, used or capable of being used solely or partly for navigation in, on, through or immediately above water, without regard to method or lack of propulsion, and includes such a vessel that is under construction'.[50] This equally broad definition of the term vessel focuses on the use of the vessel for navigation on water without regard to its propulsion or the fact that it is under construction.[51] As we have concluded in a previous study, nothing in the CSA definition of the term vessel excludes its application to autonomous ships.[52] Considering, however,

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44 Canadian case law discusses this provision without commenting on it in detail: *R. v. Snow* 1989 CarswellNS 634 (Nova Scotia Prov.C.) para 4. *Clark v. Kona Winds Yacht Charters Ltd.*, 1990 CarswellNat 791 Fed. C. Can. para 18.

45 ibid; see also Rob McLaughlin 'Unmanned naval vehicles at sea: USVs, UUVs, and the adequacy of the law' [2011] Journal of Law, Information and Science 112 under section 2. As authors have also noted, it does not seem that the use of the word 'transportation' in the definition of the term vessel - as opposed to 'navigation' - has any specific meaning. Reginald Godfrey Marsden, Simon Gault, Steven J. Hazelwood, A. M. Tettenborn, *Marsden on Collisions at Sea* (Sweet and Maxwell, 2003) 192.

46 The suggestion that an autonomous vessel should be treated as a vessel 'not under command' or 'restricted in her ability to manoeuvre' under COLREGs Rule 18 in order to comply with the rules does not hold much weight generally and under Canadian law. Danish Maritime Authority Report (DMAR), 'Analysis of Regulatory Barriers to the Use of Autonomous Ships' (2017) 18, 48-49 also stating that this rule may apply if the communication link of an autonomous vessel is lost. See also Canadian Maritime Law Association, 'CMI Questionnaire on Unmanned Cargo Ships' (2018) <http://comitemaritime.org/wp-content/uploads/2018/05/CMI-IWG-Questionnaire-Unmanned-Ships-CANADA.pdf> accessed 8 January 2021 at 11-12 (CMLA).

47 McLaughlin (n 45) under section 2. Craig H. Allen, 'Determining the Legal Status of Unmanned Maritime Vehicles: Formalism vs Functionalism' (2018) 49 Journal of Maritime Law and Commerce 477, 504. The author opines that the terms of the conventions under the scoping exercise should be reviewed with great caution.

48 Collision Regulations, C.R.C., c. 141 (CR) Schedule 1 (Canadian Modifications) rules 3(n) provides: 'For the purposes of these Rules, the definition of the word 'vessel' in paragraph (a) does not apply.'

49 CSA 2001 (SC 2001 c 26).

50 The definition adds: 'It does not include a floating object of a prescribed class (*bâtiment*)'.

51 For details on propulsion see Aldo Chircop and others, (n 33) 46s. On the broad definition of the term vessel see: *Cyber Sea Technologies, Inc. v Underwater Harvester Remotely Operated Vehicle*, 2002 FCT 794 (a remotely-controlled submersible constitutes a ship), *Salt Spring Island Local Trust Committee v B & B Ganges Marina Ltd.*, 2008 BCCA 544 (stressing the fact that a vessel should be used in navigation and that every ship is a vessel, but not every vessel is a ship), *TJ Inspection Services v Halifax Shipyards,* 2004 NSSC 181, paras 38-39 (a topside structure does not constitute a vessel).

52 Marel Katsivela, 'The Effect of Unmanned Vessels on Canadian Law: Some Basic Legal Concepts' (2018) 4 Maritime Safety and Security Law Journal 47, 53. See also CMLA (no 46) 13 reasoning on a cargo ship.

that the CSA reflects the current reality of a conventional ship with a crew on board, it would be preferable to adopt an interpretation of the CSA provision or a common understanding that such a definition is applicable to autonomous vessels. The conclusion is similar for the above-mentioned COLREGs definition of a vessel. Neither provision requires the adoption of a new definition of a vessel to accommodate Maritime Autonomous Surface Ships (MASS).

In practice, many collisions occur due to bridge team's non-compliance with Rule 5, which states: 'Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision'. It contains a situation awareness task (maintain proper outlook) and a decision-making task (make a full appraisal of the situation and of the risk of collision).[53] Following Canadian case law, 'proper lookout' consists in the following: visual lookout; aural lookout; intelligent interpretation of data received from electronic navigational aids; and an unobstructed view.[54] Neither the rules nor case law refer to the subject of the look-out. It has, therefore, been suggested that all these requirements regarding situation awareness under Rule 5 could be met remotely by cameras, radar, audio technology and other technical solutions.[55] The same reasoning may also apply to the technical requirements prescribed by the Canadian modifications (lights, shapes, sound-signaling appliances, radar reflectors) of COLREGs.[56] This is so, provided that technological advancements are present to satisfy these requirements in an equivalent manner as manned vessels would. While automation has not achieved the theoretically possible feat of detecting every object in the water, it is moving in that direction as technological advances bring the new system very close to that of an officer on the bridge.[57] Such electronic devices are not subject to fatigue or attention deficit. If the situation awareness task of Rule 5 may be fulfilled by MASS, an interpretation of the COLREGs or a common understanding made, preferably at the international level (the IMO) to this effect seems like a real possibility and a positive step to take moving forward.

Regarding decision competence, it has been suggested that in order 'to make a full appraisal of the

53 Rolls Royce, 'Remote and Autonomous ships The Next steps' Advanced Autonomous Waterborne Applications Initiative, Whitepaper (2016) <www.rolls-royce.com/~/media/Files/R/Rolls-Royce/documents/customers/marine/ship-intel/aawa-whitepaper-210616.pdf > accessed 8 January 2021 at 46.

54 As noted by CMLA (n 46) 11. See also *Atkinson (Guardian of) v. Gypsea Rose (Ship)*, 2014 BCSC 1017 para 150, *Baril c. Beaumier,* 2018 QCCQ 3111 para 28-31, *R. v. Escott,* 2012 BCSC 1922 para 99, *R. v. Ralph,* 2013 NLCA 1 para 19 on the absence of proper look-out. *Kwok v. B.C. Ferry Corp.,* 1987 CanLII 2535 (BC SC)(*Kwok*) where the court stated (para 47): …either he did not look out, or his lookout was inefficient. It is axiomatic that 'an inefficient lookout is equivalent to none'. *Turcotte c. Dufour,* 2015 QCCA 1914 para 11, 32 (proper look-out obligation does not apply). *Hogan v. Buote,* 2012 PESC 10. For the proper look-out explained see *R. v. Reinbrecht,* 2015 BCSC 1960 para 483 s. It is often the case that Canadian case law reasons on the basis of negligence with respect to collisions and CR.

55 CMLA ibid. Whitepaper (n 53) 46; DMAR (n 46) 18. COLREGs Annex III article 1(e) mandating placing sound signal appliance as high as practicable on a vessel in order to 'minimize hearing damage risk to personnel' do not seem applicable to unmanned vessels. This and equivalent provisions probably need to be repealed or amended.

56 It has been stated, however, that the Canadian modifications to COLREGs may be difficult to comply with for autonomous vessels in case of difficulty encountered without having anyone on board to tackle these difficulties. CMLA ibid. 10-11.

57 Prichett (n 1) 205.

situation and of the risk of collision' under Rule 5, the presence of human decision is needed.[58] On an autonomous vessel, a remote operator - physical person - will probably fulfill this role[59] provided that the appropriate technology is present to support such a task and that the remote operator will fulfil it in an equivalent manner as persons located on board.[60] This, however, will probably not be the case of a fully autonomous vessel.[61] The intuition, experience and the situational assessment that in-person monitoring provides counter the preprogrammed, automated responses of fully autonomous vessels in fulfilling this task (decision competence).[62] It has, therefore, been suggested that new rules have to be devised for fully autonomous vessels decision-making under Rule 5, taking account of the fact that the ships are not subject to human decision competence but will act on the basis of pre-programmed choices and considerations.[63]

COLREGs also gives precedence to good seamanship over its provisions (Rule 2a).[64] Good seamanship requires proof of conduct similar to that of a reasonable and prudent mariner put in the same conditions as the ones of the case at bar; the standard is not one of perfection.[65] There is no Canadian case law suggesting that good seamanship requires a ship to be manned.[66] On a remotely controlled vessel a remote operator will probably fulfil this requirement provided that he/she has

58 Whitepaper (n 53) 46, 47. DMAR (n 46) 18-19, 48.

59 ibid DMAR 47.

60 These conditions should be a prerequisite to the substitution of human outlook by AI. The need of an equivalency standard in the performance of MASS as compared to a manned vessel has been noted by the institutions of the IMO. IMO, 'MASS' (9 August 2018) IMO Doc 100/INF.3, Annex.

61 DMAR (n 46) 18-19, 48.

62 ibid.

63 DMAR (n 46) 18-19, 48; however, in general, in robotics there is a logical impetus for delegating some expert decisions to robots J Millar and I Kerr, 'Delegation, Relinquishment and Responsibility: The Prospect of Expert Robots' in R. Calo, M. Froomkin and Ian Kerr (eds) *Robot Law* (Edward Elgar Publishing 2016) 126.

64 Whitepaper (n 53) 46. Rule 2a provides: 'Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case'.

65 *Wolverine Motor Works Shipyard LLC v. Canadian Naval Memorial Trust*, 2011 NSSC 308 para 65, *Kwok* (n 54) para 54, 55. *Conrad v. Snair,* 1995 CanLII 4175 (NS CA) states that the Collision Regulations are an example of good seamanship. In effect, keeping a proper look-out and requiring the vessel which has another vessel on her starboard side to keep out of the way of that vessel [(Rule 15, *Brown v. Harvey*, 1992 CanLII 210 (BC SC)] are universally adopted rules prescribing conduct in accordance with good seamanship.

66 CMLA (n 46) 10.

followed appropriate training required for the autonomous vessels crew[67] and that the appropriate technology is present to support such a task being fulfilled in an equivalent manner to a crew member on board. However, the incorporation of good seamanship into an automated navigation program may be coupled with serious difficulties[68] as pre-programmed systems or AI do not encompass common sense, intuition and experience. Technology, algorithms, artificial intelligence can hardly be said to display any good seamanship or reasonableness standard. This is why new rules will have to be devised for these vessels regarding the good seamanship standard, taking into account that there is no human decision making capacity on board; rather, AI will have to fulfil this good seamanship obligation.[69]

Overall, if it is possible to achieve international support for interpreting COLREGs definition of a vessel, look-out and good seamanship requirements to accommodate remotely controlled vessels, it may be that no major changes will be required with respect to these provisions. On the contrary, for fully autonomous vessels, decision making under Rules 5 and 2 cannot be viewed, at this stage, as conforming with COLREGs. For these vessels new rules will probably need to be devised at the international level.

3. Ethical and Legal Concerns Intertwined

What seemingly goes unnoticed in asking whether COLREGs applies to autonomous vessels and in making some of the above-mentioned suggestions is that, directly or indirectly, we address ethical concerns raised by the use of AI in shipping. In effect, in deciding to replace a crew by AI we decide to what extent we 'trust' AI in shipping. This responds to the question of whether automation in this

67 DMAR, (n 46) 66. Training and certification of the crew will have to be revised to accommodate autonomous vessels. ILO, 'Conclusions on the recruitment and retention of seafarers and the promotion of opportunities for women seafarers' (2019) <www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/meetingdocument/wcms_674553.pdf> accessed 8 January 2021. According to these conclusions the cost of upgrading skills should be borne by shipowners, labour-supplying States or maritime education and training institutions. Seafarers should be encouraged to understand their role in the importance of lifelong learning. E-learning, at sea or ashore, may be used to aid in this training, provided such activity does not reduce rest hours of seafarers. The present regulations STCW 1978 – International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, (adopted 7 July 1978, entered into force 28 April 1984) 1361 UNTS 2 (STCW Convention) and STCW-F 1995 – International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995 (adopted 7 July 1995, entered into force 29 September 2012) governing training and certification are part of the IMO scoping exercise. IMO Doc MSC 100/WP.8, Appendix 1.

68 Whitepaper (n 53) 47.

69 A significant challenge related to COLREG-compliant algorithms for navigation is that the COLREGs is writ¬ten for a human operator, and sometimes the require¬ments are qualitative and open to interpretation. If the COLREGs is to be embedded in an algorithm for making navigational decisions, there can be no room for interpretation, because two algorithms interpret¬ing the regulations differently may cause an accident. Efforts may, therefore, be made to make quantitative COLREGs with clearly defined rules to avoid different interpretations. Such rules can be developed and maintained by the industry. Group Technology and Research Position Paper, 'Remote-Controlled and Autonomous Ships in the Maritime Industry safer, smarter, greener' (2018) < https://maritimecyprus.files.wordpress.com/2018/09/dnv_gl_autonomous_ships_2018-08.pdf> accessed 22 April 2021 at 11.

field is ethically acceptable.[70] Based on mentioned suggestions made with respect to COLREGs and autonomous vessels it seems ethically acceptable to replace human monitoring by automation for purely technical standards (involving look-out, lights, sound signals) but a similar decision is more sensitive regarding decision making competence (good seamanship, look-out/decision making) due to fact that the human experience, intuition and (situational) assessment cannot be easily replaced by AI. In this way, legal amendments and ethical considerations are intertwined. Despite this fact, the ethical aspect of automation in shipping often goes unnoticed in devising new legal rules or in amending existing ones.

Ethical concerns regarding autonomous vessels make part of a larger query of whether and to what extent it is ethically permissible to replace human work by AI. Indeed, technological advances in other fields of activity have led to job and wage cuts.[71] This trend may also be present in shipping creating an ethical dilemma regarding the replacement of human work by robotics. Further, as perfect as an operating system may be, it cannot avoid every collision.[72] Accidents such as collisions caused by autonomous vessels will occur and – especially the high-profile ones – will trigger 'a crisis of confidence' in the public opinion that often perceives automation in fear viewing autonomous software as a recipe for premeditated murder.[73] The reason for this distrust is not the fact that automation increases the number of accidents and injuries but, rather, the fact that serious injuries caused by automation are perceived as 'different'.[74] This adds to the current ethical concerns in introducing AI.

To counter these ethical concerns, arguments have been made that automation and digitalization will create shore-based jobs in shipping which will appeal equally to men and women[75] eliminating the exposure of current on board mariners to the perils of the seas. Thus, job losses due to automation will be also accompanied by job creation.[76] Such jobs will require different training and qualification to which the work force will have to adapt.[77] Further, if, as predicted, automation in shipping reduces

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70 Millar J. and Kerr I. 'Delegation, Relinquishment and Responsibility: The Prospect of Expert Robots' (eds.) in R. Calo, M. Froomkin and Ian Kerr *Robot Law* (Edward Elgar Publishing Ltd 2016) 120, 127 commenting in other fields of study.

71 Don Pittis, 'Yes, computers really are taking jobs from humans — especially in banking' (2019) <www.cbc.ca/news/business/ai-compuers-jobs-banking-1.5305680> accessed 8 January 2021. On US data: Grome (n 4) 54.

72 Reasoning by analogy to unmanned vehicles: Noah Goodall, 'Ethical Decision Making During Automated Vehicle Crashes' (2014) 2424 Transportation Research Record Journal of the Transportation Research Board 58, 59.

73 Reasoning by analogy to unmanned vehicles: Bryan H. Choi, 'Crashworthy Code' (2019) 94 Washington Law Review 39, 49 (Choi).

74 ibid.

75 World Maritime News, 'In Depth: Shore-Based Jobs Big Opportunity for Women to Join Maritime' (2018) <https://worldmaritimenews.com/archives/246969/interview-shore-based-jobs-big-opportunity-for-women-to-join-maritime/> accessed 8 January 2021.

76 Nautilus International, 'Increase In autonomous ships will not mean shortage of jobs for seafarers' <www.nautilusint.org/en/news-insight/telegraph/increase-in-autonomous-ships-wont-mean-a-shortage-of-jobs-for-seafarers/ > accessed 20 april 2021.

77 It has been suggested that the cost of upgrading skills should be borne by shipowners, labour-supplying States or maritime education and training institutions. ILO, 'Conclusions on the recruitment and retention of seafarers and the promotion of opportunities for women seafarers' <www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/meetingdocument/wcms_674553.pdf> accessed 20 April 2021.

human error and, therefore, collisions at sea, the 'crisis of confidence' that accompanies automation may be tackled through education regarding the benefits of automation in shipping and its contribution to reducing collisions at sea compared to manned vessels. In this regard, the argument has been made that if technology reduces collisions compared to the current reality, it should be introduced into commercial shipping even if it is imperfect.[78]

Specific fact patterns invite us, however, to reflect further on the validity of some of the above-mentioned arguments. In this scenario let us suppose, for example, that a manned cargo vessel is in a narrow channel navigating using Electronic Chart Display and Information System (ECDIS)[79] , radar and visual piloting techniques.[80] A jet-ski or other small boat overtakes the vessel at high speed and then abruptly stops directly in the path of the vessel at a distance of about 1000 feet in order to take a selfie in the vicinity of the enormous ship. The small boat remains out of sight from the bridge under the bow of the vessel. The bridge crew, that cannot see what the small boat is doing, reacts with five short and a long blast on the ship's whistle[81] signifying doubt as to whether sufficient action is being taken by the small vessel to avoid collision and the presence of an intervening obstruction in the channel. Once the jet-ski goes out of sight and does not emerge within a reasonable time, the master of the vessel brings the telegraphs to stop or minimum ahead to maintain steerage while deciding whether to initiate a crash-stop or deviate outside the channel. Further, in order to avoid the collision[82] and the subsequent loss of life or injury and while the jet-ski is out of sight, the master of the cargo vessel moves it to the outer edge of the channel, risking its grounding due to bank interaction, sending deck crews forward to standby the anchors in case the vessel has to crash stop[83] or leave the channel intentionally to avoid collision. The actions of the pilot follow good seamanship standards. The jet-ski eventually re-emerges visually for the bridge crew with the occupant waving merrily to the crew on the cargo vessel. No collision or grounding occurs and both vessels continue their voyage.

Following this scenario, the question is whether an autonomous vessel would be able to detect the jet-ski and react in a similar way to the captain of the manned vessel. Several considerations/questions, including ethical ones, have to be discussed. First, whether onboard sensors would be sophisticated

78 Reasoning by analogy to other driverless vehicles: Bryant Walker Smith, 'Slow Down that Runaway Ethical Trolley' (2015) <https://cyberlaw.stanford.edu/blog/2015/01/slow-down-runaway-ethical-trolley> accessed 8 January 2021. According to the author, as Voltaire has stated, 'we should not allow the perfect to be the enemy of the good'. What is important in this case is for the people and entities involved in the designing of data and operating systems to improve them with the main objective of minimizing harm. Julian De Freitas and others Doubting Driverless Dilemmas' (2020) 15(5) Perspectives on Psychological Science 1284, 1286.

79 The ECDIS is electronic chart system facilitating navigation in identifying locations and attaining directions. ECDIS complies with IMO standards.

80 We would like to specifically thank Captain Chris Connor (n *) for his substantial contribution in putting together this scenario and for commenting on it. Interview with Chris Connor, Captain Chris Connor Chair - V&P Committee Company of Master Mariners of Canada (8 November 2019). Many thanks also due to Jack Gallagher from Hammurabi Consulting for commenting on it.

81 COLREGs Rules 34(d) (e)-Manoeuvring and Warning Signals.

82 Following Rule 17 COLREGs (action by a stand on vessel to avoid collision) and Rule 2.

83 For a similar scenario (resulting, however, in loss of life and material damage) reasoning on COLREGs violations and criminal liability see *R. c. Cloutier,* 2007 QCCQ 13533. In this case, the pilot of a container ship was not found criminally liable based on COLREGs following a collision with a sailboat.

enough to pick-up and maintain in view the small boat under the bow of the vessel. It takes sophisticated sensors to detect a small vessel under the bow of the vessel.[84] Even if such sensors exist or may easily be developed and used on an autonomous vessel – especially if placed at the bow of the vessel - one cannot but wonder whether such a sensor would be able to make the difference between a jet-ski and another presence/obstacle such as a bird, in which case the reaction of the vessel would probably be very different. The presence of technological advances sufficient to ensure at least equivalency in the look-out effected by AI and by a crew on board constitutes, therefore, an important condition to an effective look-out performed by an autonomous vessel[85] and, subsequently, an important condition before allowing autonomous vessels to navigate the seas. Such a condition also addresses, in part, ethical issues that would be present in the case that AI would not be able to perform a proper look-out as a manned vessel would. In effect, if AI cannot perform an overall effective look-out as a manned crew would, it should not be ethically acceptable to place it on board vessels.

Second, provided that the AI present is sufficient to detect the small vessel and perform a proper look-out, would a remote operator sitting in a control room, accurately judge the distance and rate of closure of something as small as a jet-ski/small boat in order to evaluate and avoid the risk of collision and would he/she be able to accurately manoeuvre the vessel to the side of the channel with the support of AI as the master of the vessel did in our example? The answer to these questions depends, once more and to an important extent, on the level of technology present.[86] It would take a sophisticated operating system in order to accurately evaluate the distance of the autonomous vessel from the jet-ski or small boat and from the outer edge of the channel so as to achieve a similar reaction by the remote operator to that of the master of the manned vessel. This also stresses the point already made regarding the technological advances that need to be present in order to achieve equivalency in the reaction of the autonomous vessel and avoid, as a result, legal and ethical issues arising from the absence of such an equivalency.

Finally, the question arises whether a fully autonomous vessel would be able to react successfully as a manned vessel would, altering its pre-programmed speed and course. If a scenario or a response such as the present one is not pre-programmed accurately into the operating system of the vessel, it is not certain what an autonomous vessel would do and how effective its reaction would be. It may be that an autonomous vessel would try to steer away unless clearance prohibits it or it may try to do a crash stop following its COLREGs programming and its coded answers to similar scenarios. However, an automated system may struggle to match a captain's train of thought monitoring the progress of the small vessel, knowing its condition and ability to handle its 'dangerous' course, catching its

84 Sensors that can be placed on MASS and which are able to identify small objects in the water seem to exist. Wilko C. Bruhn, Hans-Christoph Burmeister, Jonas A. Moræus, Matthew Thornton Long, 'Conducting look-out on an unmanned vessel: Introduction to the advanced sensor module for MUNIN's autonomous dry bulk carrier' (The 10th International Symposium ISIS 2014 Integrated Ship's Information Systems, Hamburg, 4 September, 2014) <http://www.unmanned-ship.org/munin/wp-content/uploads/2014/09/MUNIN-ISIS-final-online.pdf> (accessed 6 May 2021).

85 COLREGs Rule 5.

86 We take for granted that the training of the remote operator will allow him/her to match good seamanship standards.

'last-minute' alteration of course, moving the vessel to the side of the channel where there is no bank interaction and being ready to correct its course at any time as needed. This scenario presupposes the exercise of good seamanship as explained above which cannot be easily replicated by an autonomous vessel and cannot easily be programmed in a system covering all possible at-sea scenarios.[87] Apart from the question raised earlier as to the conditions under which fully autonomous vessels may be subject to COLREGs, the question posed here is whether or not and, if yes, under what conditions, it is ethically acceptable to substitute the human presence on board a vessel by AI and preprogrammed choices on a fully autonomous vessel. The need for equivalency in the reaction of manned and autonomous vessels does not seem to be met by fully autonomous vessels raising further questions as to whether it is ethically justifiable to delegate to AI decision making under COLREGs.

The ethical questions raised regarding the reaction of autonomous vessels to the specific incident described above as opposed to the reaction of a manned vessel support the general ethical concerns discussed earlier relating to the substitution or degree of substitution of manpower by AI in shipping and other fields of activity. In the future, the degree of trust put into robotics in shipping will determine the level of automation present on a vessel. Although the IMO's regulatory scoping exercise intends to determine to what extent provisions in a list of IMO instruments may or may not be applicable to ships with varying levels of autonomy and determine the most appropriate way of addressing MASS operations, there are no ethical rules present to govern the delegation of human tasks to robotics in shipping even though ethical issues are omnipresent as the above-mentioned scenario and analysis reveal.

The ethical issues underlying the introduction of autonomous vessels in shipping and outlined, in part, by the scenario described above, highlight the importance of elaborating ethical guidelines to govern them. These guidelines will delineate the degree and the conditions of delegation of the vessel's control to AI if, or rather, when autonomous vessels will be used in merchant shipping.[88] For our subject matter, the ethical guidelines may determine to what extent decision making competence under the Collision Regulations will be delegated to automated systems and under what conditions (for example, based on the degree of technology present and equivalency considerations). In effect, such guidelines may provide that: 1) Situation awareness under Rule 5 COLREGs may be delegated to AI provided that the degree of advances in technology perform at least an equivalent look-out to that of a manned vessel. 2) Decision competence under COLREGs may be delegated to a remote operator or AI provided that the level of technology to support such decisions is present and that the collision prevention or avoidance effected is equal to or better than that of a manned vessel. Such guidelines, which may apply generally to autonomous vessels and not only with respect to collision avoidance, ensure that the advent of technology will not counter the beneficial effects of having a crew on board. These guidelines proclaim an equivalency principle noting that the advent of AI

87 As stated by Captain Chris Connor (n 80). See also DMAR (n 46) 18.

88 DMAR (n 46) 48-49. The report stresses the importance of developing ethical guidelines prioritising, for example, protective considerations as well as defining which types of decisions should be left to human beings.

produces equal or better results to the presence of crew on board.[89] If such equivalency does not exist, the substitution of a crew on board by AI is not ethically warranted.

Ethical guidelines to govern autonomous vessels may go even further and require engineers, manufacturers and programmers of operating systems and algorithms to prioritise, for example, safeguarding human life over cargo or the vessel in any given scenario (regarding COLREGs or shipping in general). In the above-discussed scenario, avoiding a collision and the subsequent loss of life or injury (for example, of the jet-skiers) constitutes an underlying consideration in the reaction of the master of the manned vessel. Thus, other ethical guidelines that could govern autonomous vessels and complement the equivalency guideline described above applying with respect to COLREGs or generally may provide that:[90] first, the protection of human life is prioritised over all other objectives (such as preserving the cargo or the vessel) in collision avoidance and, in general, in introducing autonomous vessels into shipping.[91] Second, the protection of human life does not discriminate based on age, gender, disposition, physical or mental state.[92] Third, automation in shipping is not ethically justifiable unless it protects human life comparative to manned vessels.[93] Fourth, manufacturers' or programmers' liability is subject to the above ethical guidelines which they are obliged to follow in continuously optimising technology and programming of autonomous vessels (including collision avoidance).[94]

Such guidelines governing autonomous vessels stress the need to promote ethics in introducing AI into shipping. They are also beneficial because they create a regulatory framework for programmers' or manufacturers' liability setting ethical priorities to be observed and not merely utility considerations or the minimisation of the programmers' and manufacturers' liability. At the same time, putting together ethical guidelines to govern autonomous vessels provides, in general, a sense of legitimacy in the use of AI in shipping.

Ethical guidelines may be developed domestically or internationally.[95] The latter is a preferred choice following the universal nature of ethical concerns present in autonomous vessels. It also ensures that all the industry players – such as government(s), ship-owners, crews and captains, naval architects, autonomous

89 For equivalency concerns expressed at the IMO level regarding the elaboration of legal principles see IMO (n 60) and accompanying text. The equivalency principle could, therefore, address legal and ethical concerns alike. Regarding ethical rules this principle would cover all levels of automation, not only remotely controlled vessels.

90 The mentioned guidelines were inspired by analogous work done in other modes of transport: Federal Ministry of Transport and Digital Infrastructure, 'Ethics Commission: Report on Automated and Connected Driving' (2017) <www.bmvi.de/SharedDocs/EN/publications/report-ethics-commission-automated-and-connected-driving.pdf?__blob=publicationFile> accessed 8 January 2021. See also Bryan H. Choi, 'Crashworthy Code' (2019) 94 Washington Law Review 39-117 in general.

91 Rule inspired by Federal Ministry of Transport and Digital Infrastructure, ibid.

92 ibid.

93 ibid.

94 ibid. See also Bryan H. Choi, 'Crashworthy Code' (2019) 94 Washington Law Review 39..

95 DMAR (n 46) 19. In this regard, it is interesting to note that the International Electrotechnical Commission (IEC) is the co-founder of the newly created Open Community for Ethics in Autonomous and Intelligent Systems (OCEANIS) which deals with the key ethical issues relating to artificial intelligence. As in the coming years ethical issues regarding unmanned vessels will be raised and will need to be addressed OCEANIS could provide a useful tool (forum) in addressing such issues. OCEANIS, 'About' (2020) <https://ethicsstandards.org/about/> accessed 8 January 2021.

vessels technology experts, insurers, cargo owners, shippers, maritime lawyers – will be involved in the discussion and elaboration of such guidelines. At present, the IMO has not addressed ethical issues raised by autonomous vessels. However, addressing such issues in the future is not excluded. This, along with the legal principles currently under way to govern autonomous vessels as well as the technological improvements regarding automation in shipping will enhance safety in navigation and fairness of the applicable rules.

4. Conclusion

The study examined legal issues under COLREGs and Canadian law such as whether an autonomous vessel may be qualified as a vessel under COLREGs and whether an autonomous vessel can meet the COLREGs look-out and good seamanship requirements. These questions related to COLREGs, which were looked at from a Canadian law perspective, are questions that need to be addressed by any state party to COLREGs. As a result, the present study is of interest beyond the Canadian context. It concluded that although the look-out and good seamanship requirements could be performed by remotely controlled vessels without making major changes to the existing rules, for fully autonomous vessels, decision making under Rule 5 (proper look-out) and Rule 2 (good seamanship) may not be viewed, at this stage, as conforming with COLREGs. Further, these legal issues under COLREGs and the solutions provided to them reflect ethical concerns raised by autonomous vessels and the degree to which we trust AI in shipping. In this regard, the present study identified the need for ethical principles to govern autonomous vessels. Guided by initiatives present in other areas of transportation it provided some direction in developing these principles. Further studies need to be undertaken in this area in order to expand and detail ethical rules to govern autonomous vessels. Overall, from the analysis above, the need for a legal and an ethical framework to govern autonomous vessels seems evident. In particular the ethical rules to govern these vessels must be explored further.