THE ADVENT OF UNMANNED UNDERWATER VEHICLES AND THE INADEQUACY OF THE LAWS OF MAN

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ABSTRACT

An important category of maritime technology in the 21st century is unmanned maritime systems. For that purpose, much of the prescriptive discourse concerning the use of unmanned underwater devices; UMS present distinctive questions in understanding the application of existing law. This article summarizes the possible technological capabilities of UMSs linked with its legal status under International Law, and shall attempt to put forth and answer questions regarding regulations and points of enforceability under International Maritime Law, especially the UNCLOS concerning UMSs, if any. Major emphasis shall be directed towards the "grey area", highlighted due to the 'Bowditch incident'. It is not yet entirely possible to substantially argue whether UMSs enjoy status as ships under UNCLOS; even if they do, it is unlikely that they can be classified as warships.

INTRODUCTION

Technological advancements in the 21st century are commensurate with the fast growing economies of the world. Considering this, the need for natural resources has been quintessential in order preserve the national interest of a state. With the advent of unmanned, autonomous devices, States have been invested in the process to acquire better infrastructures and systematic mechanisms to assist their objectives concerning military and economic issues. One cognate case is the existence of unmanned Marine Systems, which as the name suggests, operate under the waters without human involvement in its course of navigation. The function of such systems aims at, efficiently collecting data through reconnaissance and active surveillance. The need for addressing this issue is thus indispensable witnessing the rising use of such devices, which could possibly be used for fulfilling military objectives of one State and jeopardizing another.

This piece hence shall substantiate and try to observe the capabilities of UMSs and the legal framework which needs to be formulated in order to address and put forth the visible lacunae pertinent in the present context.

THE EMERGENCE, CHARACTERISTICS AND LEGAL STATUS OF UNMANNED UNDERWATER VEHICLES

Unmanned Maritime Systems (UMS) are not an entirely new concept as their use was seen during the Second World War for clearing minefields and for damage assessment as well as during the Vietnam War. UMS may be further categorized as Unmanned Surface Vehicles (USVs) and Unmanned Underwater Vehicles (UUVs). This Article shall focus primarily upon the capabilities of UUVs.

Use of Unmanned Underwater Vehicles (UUVs) is fairly recent, which is subject to aggressive development. For example, while the US defence budget for unmanned air systems remained constant between 2011 and 2015, funding allocated to UMSs increased over 300%.[1]

TECHNOLOGICAL CAPABILITIES OF UUVS

A UUV is a "self-propelled submersible whose operation is either fully autonomous (Pre-programmed or real-time adaptive mission control) or under minimal supervisory control and is untethered except, possibly, for data links such as a fiber optic cable".[2]

Similar to vehicles deployed on the surface, UUVs are capable of undertaking numerous missions. Their unique features, especially their ability to bear a low acoustic and electromagnetic signature, allow them to remain comparatively undetected when navigating underwater. Due to their usual small size, ability to be deployed by aircrafts, ships and other unmanned surface vehicles, UUVs are able to maintain an element of surprise and are less susceptible to rough weather and navigational difficulties when operating in shallow waters. Also, apart from nuclear submarines, they are the only undersea systems with the capacity to operate beneath the polar ice caps.

Other possible applications include tapping or disrupting communication cables installed on ocean floors. Due to the various functions of these cables, they are an attractive target for States to acquire strategic intelligence, and often to hamper or prevent flow of information.[3]

Numerous UUV variants are under development. Illustrative is the Haiyan, a Chinese vehicle that can operate at depths of up to 1,000 meters, travel at 4 knots, and sustain operations for a

[1]DoD, Unmanned Systems Integrated Roadmap FY2011–2036, 2011, p. 16 available at www.acq.osd.mil/sts/docs/Unmanned%20Systems%20Integrated%20Roadmap%20FY2011-2036.pdf; US Department of the Navy, The Navy Unmanned Surface Vehicle (USV) Master Plan, 2007 (USV Master Plan)

[2] US Department of the Navy, The Navy Unmanned Undersea Vehicle (UUV) Master Plan, 2004 (UUV Master Plan), p. 4, available at: www.navy.mil/navydata/technology/uuvmp.pdf.

[3] See, e.g. Bruce Dorminey, "How Bad Would It Be if the Russians Started Cutting Undersea Cables? Try Trillions in Damage", Forbes, 2 November 2015, available at: www.forbes.com/sites/brucedorminey/2015/11/02/russian-navy-probing-u-s-undersea-communications-cables-in-new-global-threat/#6b625ac766b1.

month. It carries multiple sensors that enable it to perform missions such as surveillance of submarines, undersea patrols, and minesweeping and, in certain configurations, anti-surface warfare.[4] Russian UUV development apparently includes a "nuclear delivery drone" capable of transporting a nuclear payload up to 6,200 nautical miles, deep underwater, at speeds of up to 56 knots.[5]

UNMANNED UNDERWATER VEHICLE: A SHIP?

While the UNCLOS does not expound the term "ships", when reading the instrument in its own context, as is appropriate pursuant to Article 31 of the Vienna Convention on the Law of Treaties[6], it is apparent in its consideration that ships are manned. For instance, according to Article 94 of UNCLOS, "a flag State must ensure that each ship flying its flag is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship [and] that the master, officers and, to the extent appropriate, the crew are fully conversant with and required to observe the applicable international regulations concerning the safety of life at sea, the prevention of collisions, the prevention, reduction and control of marine pollution, and the maintenance of communications by radio."[7]

There are some definitions available in treaties but they in turn make it more intricate. Considering, the 1954 Convention for the Prevention of Pollution of the Sea by Oil (as amended) defines a ship as "any sea-going vessel of any type whatsoever, including floating craft, whether self-propelled or towed by another vessel, making a sea voyage"[8]

[4] DoD, Defence Science Board, Summer Study on Autonomy, 2016, p. 43.

[5] Kyle Mizokami, "Pentagon Confirms Russia Has a Submarine Nuke Delivery Drone", Popular Mechanics, 8 December 2016, available at: www.popularmechanics.com/military/weapons/a24216/pentagonconfirm-Russia-submarine-nuke/.

[6] Vienna Convention on the Law of Treaties (VCLT), 1155 UNTS 331, 23 May 1969, Art. 31(1)–(2).

[7] UNCLOS, Art.92 (4) (b) (c).]

[8] 1962 Amendments to the 1954 International Convention for Prevention of Pollution of the Sea by Oil, 600 UNTS 332, 11 April 1962, Art.1 (1).

The 1973 Convention for the Prevention of Pollution from Ships (as amended) provides that a ship is "a vessel of any type whatsoever operating in the marine environment … including hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms"[9] and the 1996 Protocol to the London Dumping Convention (as amended) states that 'vessels and aircraft' means waterborne or airborne craft of any type whatsoever".[10] Convention on International Regulations for The Preventing Collision at Sea (COLREGS), which applies to "every description of water craft, including non-displacement craft and seaplanes used or capable of being used as a means of transportation on water",[11] and the Convention on Conditions for Registration of Ships (not yet in force), which extends to "any self-propelled seagoing vessel used in international seaborne trade for the transport of goods, passengers, or both".[12] This description is of different approach.

Ostensibly, it is not possible to indubitably characterize UUV as ships, at least with regards to the application of maritime treaties. As they are unmanned, it is arguable that UNCLOS is inapplicable to them. By contrast, the 1954 Pollution Convention takes a highly inclusive approach by imposing no such requirement and encompassing even floating seagoing craft that are unpropelled. The 1973 Pollution Convention and the 1996 Protocol to the London Dumping Convention are likewise inclusive. All three would extend to UUV. The differing approaches are coherent because the definitions are formulated for the purpose of the individual instruments. Thus, for instance, the pollution conventions adopt a broad descriptive approach since their object and purpose is to limit pollution at sea to the extent feasible, whereas the

[9] International Convention for Prevention of Pollution from Ships of 1973, as amended by the 1978 Protocol, 1340 UNTS 61, 184, 17 February 1978, Art. 2(4).

[10] Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes or Other Matter, 36 ILM 1, 7 November 1996, Art.1 (6). See also Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1046 UNTS 138, 29 December 1972, Art. III (2).] Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes or Other Matter, 36 ILM 1, 7 November 1996, Art.1 (6). See also Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1046 UNTS 138, 29 December 1972, Art. III (2).]

[11] Convention on the International Regulations for Preventing Collisions at Sea, 28 UST 3459, TIAS No. 8587, 1050 UNTS 16, 20 October 1972, Rule 3(a).

[12] United Nations Convention on Conditions for Registration of Ships, UN Doc.TD/RS/CONF/19/Add.l, 7 February 1984 (not yet in force), Art. 2

COLREGs are intended to regulate navigation on the surface of the water and therefore do not reach submerged submarines or UUVs. Therefore, for the purpose of determination of the applicability of UUVs, emphasis must be put to the instrument's scope and provisions relating to definitions. UNCLOS presents a unique case in it, that it lays down fundamentals like maritime navigational regime, but there is no definitive provision and hence is subject to interpretation which has lack of consensus. As noted, it would appear the instrument is meant only to apply to manned seaborne craft. It would be more sensible to establish a comprehensive and concrete legal framework rather than interpreting existing treaties and the definitions that lie therein; apply it in a disassociated manner for the purpose of such potential and prospective UUV. Such an assertion invites the counter-argument that States Parties may wish to limit certain rights which would attach to UUV if they qualify as ships, such as the rights of innocent, transit and archipelagic passage, by taking a narrower approach. Therefore, it will be highly important to observe subsequent State practice regarding the legal status of UUV because "any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation" is relevant as to the Convention's proper interpretation.[13] Presently it may be premature to conclude definitively with regard to any existing instrument's applicability to UUV.

Despite the UNCLOS reflecting customary international laws and the rights and obligations enjoyed by all vessels , due to such custom, one still cannot make a substantial argument in this regard due to lack of state practice and *opino juris* regarding the operations of UUV. It is hence important to note that a subsequent state practice and the emergence of an opino juris may change the status quo, and these developments must be observed and addressed closely. Considering If UUV do enjoy navigational rights, they will be bound by the conditions associated with those rights. For example, during innocent, transit and archipelagic sea lanes passage, a UMS would be required to proceed continuously and expeditiously**[14]**, and to refrain from any activity other than that incident to its passage, especially the threat or use of force against the coastal State.[15] Innocent passage carries further restrictions – those of most

[13] VCLT, Art. 31(3) (b)

[14] UNCLOS, Arts 18(2), 38(2), 53(3).

[15] Ibid, Arts 19(2), 39(1), 54.

relevance to UUV include prohibitions on exercises or practice with weapons; the collection of information.

To the prejudice of the coastal State; acts of propaganda; the launching, landing or taking on board of any military device; research and survey activities; and interference with communications systems, a category that would include underwater communications cables.[16]

Furthermore, while UUV denominated to exercise transit or archipelagic passage would be allowed to do so in their normal mode,[17] which may be submerged for a UUV, during innocent passage all underwater vehicles must be on the surface.[18]

Even if it may be said, *arguendo* that UUVs enjoy CIL rights specifically the right to innocent passage, which it shall still be bound by the obligations associated with those rights. The most relevant of such obligation is the requirement to proceed continuously and expeditiously[19] and to refrain from any activity other than those incident to its passage, especially the threat or use of force.[20]

Furthermore, the most relevant, restrictions of the right to innocent passage upon UUVs must be prohibitions on exercises or practice with weapons, the collection of information prejudicial to the security of the coastal state.

The launching, landing or taking on board of any military device; research and surveillance activities and interference with communication systems are activities which a UUV-due to its advanced capabilities-can carry out with ease.

THE WARSHIP DILEMNA

In furtherance to the question of UUVs being a warship there is a much debated controversy as to its ability to qualify as a ship. Even if, *arguendo*, it qualifies as a ship it would not be

[16] Ibid, Art. 19(2).

[17] Ibid, Arts 39(1) (c), 54.

[18] Ibid., Art. 20

[19] UNCLOS Art.18 (2), 38(2), 53(3)

[20] UNCLOS Art. 19(2), 39(1), 54: UNITED NATIONS CHARTER Art. 2 Para 4

plausible for it to qualify as a warship due to the law at hand. Article 29 of UNCLOS defines warships as:-

"*a ship belonging to the armed forces of a State bearing the external marks distinguishing such ships of its nationality, under the command of an officer duly commissioned by the government of the State and whose name appears in the appropriate service list or its equivalent, and manned by a crew which is under regular armed forces discipline".*

The conditions are universally recognized and there is little question that they have acquired customary international law status.[21]

On a mere perusal of the language of the abovementioned article it can be prudently inferred that the definition of warships include manned vessels or vessels operated by a crew. Further the definition not only prescribes for a crew but also to be under the command of an officer duly commissioned by the government and also that his name shall be in the service list or its equivalent. It is not plausible for a drone to satisfy such conditions as it is not manned, so the possibility of it being a warship finds itself in a bleak scenario.

However, another outlook is that each of these rights are granted equally to other ships that are "clearly marked and identifiable as being on government service and authorized to that effect".[22] UNCLOS imposes no further criteria, meaning that there is no inherent reason why a UMS could not be duly authorized by a government to exercise each of the peacetime rights enjoyed by warships, so long as it is marked accordingly and, crucially, qualifies as a ship.

When it comes to the sovereign immunity of such vessels it could not be ascertained whether the rules applicable to it would be under sub-section C from Article 29-32 or Sub-Section B from Article 27-28 of Section 3 of UNCLOS which refers to Immunities to be given to warships or Government vessels. The issue of sovereign immunity becomes more difficult to resolve if UMSs do not qualify as ships in the first place. The German Commander's Handbook takes the position that UMSs enjoy sovereign immune status to the extent that they are controlled

[21] See, e.g., Louise Doswald-Beck (ed.), San Remo Manual on International Law Applicable to Armed Conflicts at Sea, Cambridge University Press, Cambridge, 1995 (San Remo Manual), para. 13(g)

[22] UNCLOS; Arts. 107, 111(5), 224. Similarly, Article 110(5) provides for the right of visit to be exercised by "other duly authorized ships or aircraft clearly marked and identifiable as being on government service"

from a ship which itself enjoys such status.[23] However, the United States goes further by asserting that "USVs and UUVs engaged exclusively in government, noncommercial services are sovereign immune craft. USV/UUV status is not dependent on the status of its launch platform."[24]

Now if we distinguish the above mentioned status of UUVs, it could be said that due to its status not been defined as a ship or a government ship or a warship even its sovereign immunity is lost and due to which there have been several instances where the drones or UUVs have been captured by the Coastal State and the flag state have been denied access due to the nature of UUVs. One of which recently happened was were China captured U.S. drone as it was in its waters , wherein the US said that it was lawfully navigating although china had a difference of opinion. Such instances show that there is a need to define such UUVs so that neither the flag state nor the Coastal state shall suffer its consequences.

THE BOWDITCH INCIDENT: IDENTIFYING A LEGAL GREY AREA

On December 15, a Chinese warship removed from the water a U.S. unmanned underwater vehicle (UUV) in the Philippines' Exclusive Economic Zone (EEZ). The autonomously operating drone had been deployed by the U.S. Navy oceanographic surveillance ship, the *Bowditch.* After several days of China-U.S. verbal tit-for-tat, the Chinese warship returned the UUV. [25] Despite the swift and peaceful resolution of the incident, it opened the doors to a variety of legal questions, the most relevant of which were the navigational rights and obligations of these devices, and their status under International Law.

[23] German Navy, Commander's Handbook: Legal Bases for the Operations of Naval Forces, SM 3, 2002, p. 45

[24] US Navy, US Marine Corps and US Coast Guard, The Commander's Handbook on the Law of Naval. Operations, NWP 1-14M/MCWP 5-12/COMDTPUB P5800.7A, 2007 (US Commander's Handbook), para. 2.3.6.

[25] This was widely reported. See for e.g., "U.S. Demands Return of Drone Seized by Chinese Warship", New York Times, 16 December 2016, available at: www.nytimes.com/2016/12/16/us/politics/usunderwater-drone-china.html; "US-China Underwater Drone Incident: Legal Grey Area", *The Diplomat*, 11 January 2017, available at: https://thediplomat.com/2017/01/us-china-underwater-drone-incident-legal-grey-areas/

It is worthy to note that the US claimed that the *Bowditch* was conduction 'scientific research' which would require the consent of the Philippines as under UNCLOS, "marine scientific research" (MSR) can only be undertaken in a country's EEZ with its permission. Moreover, foreign vessels exercising their rights in a country's EEZ must have "due regard" for the rights and duties of the coastal state as well as for the interests of other states exercising their high seas freedoms.

According to Dr. Sam Bateman[26] in terms of both intent and purpose, these survey types, such as 'scientific' research, 'hydrographic' research and 'military' research cannot be neatly differentiated and have great overlap. He contends that the very reason that the Convention's consent regime was established for Marine Scientific Research (MSR) is that information collected thereby may have economic value or may be used to undermine the security of the state. Some of the scientific information and data obtained by military surveys may be of great value for commercial exploitation as well as to achieve military objectives. Also advances in technology and the need for broader 'hydrographic' data have conflated hydrographic surveying with MSR. Indeed, hydrographic data now have much wider application than safety of navigation and some of the uses are relevant to the rights and duties of a coastal state in its EEZ. It is becoming increasingly difficult to argue that hydrographic data collected today will not have some economic or security value in future. Thus similar considerations would now seem to apply to the conduct of hydrographic surveying in the EEZ as apply to the conduct of MSR there. In sum, the distinction between different categories of surveying and MSR hinges on more than intent and the initial purpose of collecting the data. Indeed, it seems that the potential economic and security value and utility of the data to the coastal state should also be considered.

Both China and the United States are increasingly using UUVs for intelligence, surveillance, and reconnaissance (ISR). Thus, drones and attacks thereon will increasingly become tools in coercive diplomacy enabling rivals to send a strong signal without targeting one's human opponents.

[26] Dr. Sam Bateman, Advisor (1st Jan 2018-31st March 2018), *S. Rajaratnam School of International Studies*, Nanyand Technological University, Singapore.

CONCLUSION

It can hence be argued that the technologies of unmanned maritime systems do not easily fall inside the present scope of existing laws. It is thus evident that the unmanned maritime systems are substantially the devices used for a variety of operations, the increasing use of which gives rise to the need for laws to govern them. Incidents like the *Bowditch* incident only serves to underline the urgency of the requirement for a concrete and comprehensive law. The potential of UMSs has been discussed and it is explicit that the use and availability of such devices, when used for due surveillance and collection of 'hydrographic' data, may also be used for reconnaissance and military advantage.

We thus need either an amendment in UNCLOS or some other enforceable treaty applicable to UMSs, particularly UUVs which shall govern their movement near territorial waters; in contagious zones, EEZs and international waters. The inescapable, identifiable gap, displayed in the current status quo showcases a pertinent need for legalese to be at pace with technology.