

(No) Help in Sight? The Duty to Render Assistance at Sea for Unmanned Ships

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Abstract—The present paper focuses on questions arising from the use of unmanned ships with regard to the conventional and customary rule to render assistance at sea to people in danger of being lost. After determining the legal history and scope of the provision, the paper focuses on the capabilities of unmanned ships to fulfil the obligation. Doing that, the paper takes into account the recent works of the International Maritime Organization on the draft instrument to regulate Maritime Autonomous Surface Ships.

Keywords—Unmanned Ships, Duty to Render Assistance, Search and Rescue, UNCLOS, MASS Code

I. INTRODUCTION

Autonomous navigation as a whole is said to increase the overall safety of navigation [1]. This is especially true for unmanned navigation, as no personnel are exposed to the dangers and perils of the sea [2]. From a legal perspective, however, one aspect in the context of maritime safety is of particular relevance, that is the duty to render assistance at sea to people in danger of being lost. The duty to render assistance at sea is one of the oldest and most fundamental rules in maritime law and is founded on basic consideration of reciprocity and humanity [3]. On grounds of migration alone, several thousand people are lost or die at sea in the process of moving towards an international destination [4]. This figure shows that the necessity to render assistance at sea is not merely theoretical but continues to arise in practice, requiring vessels to respond whenever situations of distress occur.

As there are no people on board an unmanned ship, nor are there any basic facilities to accommodate people lost at sea, it is often questioned in the literature whether and how unmanned ships can render assistance at all [5]. This paper examines the legal requirements under international law and the capabilities of unmanned and autonomous ships to fulfil these requirements. Addressing the legal challenges of unmanned and autonomous navigation is crucial for a successful integration of this technology into the maritime domain. Therefore, legal requirements must be considered early in the design and development of these vessels to ensure that technical solutions are in place to meet these obligations.

The present paper firstly outlines the legal framework with regard to the duty to render assistance, giving historic context and precedent. Specific actions as required under the international conventions that regulate the obligation, namely the United Nations Convention on the Law of the Sea [6] (UNCLOS) as well as the relevant conventions under the auspices of the International Maritime Organization (IMO)

will be discussed. Afterwards, it is analysed whether these actions fulfil the standards set by international law and to what extent unmanned ships might require adaptation in the light of the humanitarian obligation to render assistance at sea. Contrarily, it will not be looked into how unmanned maritime systems can be used to assist current search and rescue operations, as the present paper focuses on the obligation of autonomous ships themselves.

II. LEGAL FRAMEWORK FOR THE DUTY TO RENDER ASSISTANCE

A. Historic Background

The duty to render assistance at sea to people in danger of being lost has a long-lasting tradition, the roots of which date back to the 19th century. One of the earliest mentions of assistance at sea can be found in the English court ruling of *Scaramanga v. Stamp* in 1880. Chief Justice COCKBURN held that someone who renders assistance at sea to someone else should not be penalized for such action, for example because they are then unable to fulfil contractual obligations in a timely manner [7]. The earliest form of conventional codification of a rule addressing assistance at sea can be found in the 1910 version of the International Salvage Convention [8] which mainly regulated an appropriate compensation for the salvage of the ship's cargo [9]. Article 11 of the Salvage Convention provided that '[e]very master is bound (...) to render assistance to everybody, even though an enemy, found at sea in danger of being lost'. However, Art. 2 Salvage Convention limited the remuneration for acts of assistance to the value of the property saved and did not provide for a comparable financial compensation for the rescue of persons at sea [10]. While in its original intention, the regulation of the duty to render assistance mainly covered financial losses in commercial navigation, the humanitarian component of the obligation has already been mentioned [11].

A general obligation to render assistance to people lost at sea was included in UNCLOS, which is widely considered a constitution for the oceans [12]. The wording under UNCLOS is nearly identical to Article 12 of the 1958 Convention on the High Seas [13] with the exception that the phrase 'a ship sailing under its flag' was edited to 'a ship flying its flag'. Especially the division into two distinct sections, of which section 1 is subdivided into three parts, remained consistent between the first and the third Conference on the Law of the Sea. The draft provision submitted by the International Law Commission consisted of various elements of other conventions in force at the time, most notably the 1910

Salvage Convention as well as the 1948 version of the Convention on the Safety of Life at Sea [14] (SOLAS 1948).

Regulation V/15 SOLAS 1948 states that the State parties have to ensure that necessary arrangements for coast watching and for the rescue of persons in distress at sea round its coast are made, which is now included in Article 98 (2) UNCLOS. Therefore, the third Conference on the Law of the Sea did not create new conventional obligations for UNCLOS, as it largely incorporated existing provisions from previous conventions. This demonstrates a certain form of continuity of the legal norm, as it has been enshrined in various conventions for over 100 years. Against this background, the Italian tribunal of Agrigento in its *Cap Anamur* Case declared the duty to render assistance under Article 98 UNCLOS to be so fundamental that States could not derogate from it even by bilateral treaty under Article 311 UNCLOS. Finally, it is well-established that the duty to render assistance is a 'well-rooted solidarity principle [that] corresponds to a very old customary rule in the international law of the sea' [15].

B. Legal Scope of the Duty to Render Assistance

Art. 98(1) UNCLOS regulates that every flag State shall require the master of a ship flying its flag, in so far as he can do so without serious danger to the ship, the crew or the passengers:

- (a) to render assistance to any person found at sea in danger of being lost;
- (b) to proceed with all possible speed to the rescue of persons in distress, if informed of their need of assistance, in so far as action may reasonably be expected of him;

The act of assistance must be done without discrimination of any kind and without regard to the origin and background of the person in need of assistance [16]. A person is considered to be in danger of being lost if they are in a situation where an experienced sailor would have reasonable grounds to expect that the crew is in danger of losing their lives [17]. With regard to the form of assistance required under Article 98 (1) UNCLOS, the Convention distinguishes between a duty to render assistance in (a) and a duty to proceed to the rescue in (b). In this direct comparison, rendering assistance is to be understood in a broader sense to generally contribute to the rescue of a person in distress. Contrarily, the term 'proceeding to the rescue of persons in distress' refers to actively saving a person from imminent life-threatening danger. In line with the basic considerations of reciprocity and humanity at sea [18], this includes retrieving persons onto the ship, providing them with food, water, and medical treatment, as well as transporting them to a place of safety on the mainland [19].

In this context, SOLAS 2018 Regulation III/17-1.1 specifies that all ships shall have ship-specific plans and procedures for the recovery of persons from the water, taking into account the relevant IMO Guidelines. The *Guidelines for the Development of Plans and Procedures for Recovery of Persons from the Water* stipulate that each ship should have equipment and procedures in place to rescue people from the water and bring the persons onto the ship [20]. When a person is brought on board the rescuing ship, the *Guidelines on the Treatment of Persons Rescued at Sea* stipulate that it is the master's legal and humanitarian duty to do everything possible within the capabilities and limitations of the ship to treat the rescued persons in a humane manner and meet their

essential needs for survival [21]. Finally, the *Guide for Cold Water Survival* provides guidance on, *inter alia*, the recovery of people from the water or a survival craft as well as the treatment of the recovered people [22].

As the duty to render assistance is considered a due diligence obligation [23], the flag State must take 'all necessary and appropriate measures to meet its obligations' [24]. Consequently, in order to effectively fulfil the duty, the shipmaster needs to exhaust all resources at his disposal that are suitable and necessary for the rescue. The effectiveness of the act of assistance is directly dependent on the extent of precautionary measures that have been taken in advance for such a case. Exemplary measures include stocking up food and medical supplies or maintaining rescue equipment, as well as training and instructing the personnel. If no preparatory measures for such a situation are taken at all, the object and purpose of the norm would be undermined, as undertaking rescue measures would generally be rendered impossible. This, however, would not be in line with an interpretation of this norm in good faith as required under Articles 26 and 31(1) of the Vienna Convention on the Law of Treaties [25] (VCLT). In other words, if it is required to proceed to the rescue of people, it is consequently also implicitly required that the capacity to rescue must exist as the rule would otherwise be rendered ineffective. Essentially, a shipmaster must take reasonable measures in advance to put himself in a position to be able to rescue a person in distress. Therefore, it is argued here that the due diligence obligation of the duty to render assistance can only be met if the necessary and appropriate preparatory measures are taken. This finding also reflects the general notion of the IMO Guidelines mentioned above, as well as the IMO Draft for the MASS Code that will be discussed below. Consequently, if no preparatory measures are taken, the flag State does not meet its due diligence obligation.

Nevertheless, Art. 98 (1) UNCLOS also provides for a specific exception to the duty to rescue under (b). Thereby, the master must proceed with all possible speed to the rescue of persons in distress, only insofar as such action may reasonably be expected of him. This means that in certain situations, the master does not need to proceed to the rescue of persons in distress if such assistance cannot reasonably be expected. This depends on the specific circumstances, based on the assessment of an ordinary seaman in the individual situation. For example, if the people in distress are several days away from the ship in question, it cannot reasonably be expected to accept such a significant detour, especially when a number of other vessels are located much closer to the site of the incident. [26]. This assessment might change, however, if the ship in question was the only available ship to render assistance. In general, all the circumstances of the specific case at hand need to be taken into account and weighed in the assessment.

III. Unmanned and Autonomous Ships in Focus

A. Capabilities of Unmanned and Autonomous Ships

After outlining the legal requirements for the duty to render assistance at sea, the following section discusses if and how unmanned and autonomous ships fit into the legal framework. The focal question in this regard is how autonomous ships are supposed to undertake rescue operation or host rescued people on board, especially when designed as unmanned ships. Such ships by design lack food, water, sanitary facilities or any accommodation rooms for people in

general. Due to these limited rescuing capabilities, some authors argue that the standard for the duty to render assistance should be set lower for unmanned vessels compared to conventional vessels [27]. This is often justified with the exception mentioned in Art. 98 (1)(b) UNCLOS that puts the emphasis on the reasonable expectation of the master and the ship in question [28]. The general argument is that, since there are no people on board to actually perform the rescue of persons in distress and to take care of the rescued people, no rescue activities can reasonably be expected from the unmanned ship [29].

Despite this common view that unmanned ships are incapable of directly rescuing people in distress, they can, in fact, be designed and constructed in such a way as to deliver substantial acts of assistance and even directly offer rescue activities. From a technical standpoint, it would be possible to equip an unmanned ship with devices that enable persons in distress to board the vessel. The active provision of care by medically trained personnel must be indeed regarded as impossible on board an unmanned ship due to the absence of a crew. However, it is generally feasible to establish emergency spaces containing food and water, as well as a basic supply of medical equipment. Once the people in distress have boarded the ship, it is furthermore conceivable that the autonomous and unmanned vessel could transport them to a safe location on shore, as would be the case for a conventional ship. From a technical point of view, such measures are well-achievable and, from a humanitarian perspective, would represent a high level of assistance that an unmanned ship could technically provide.

Evidently, providing for such arrangements would result in additional technical challenges and higher costs, as the unmanned vessel would ultimately need to be designed to accommodate and shelter persons on board. It can be questioned whether such actions disproportionately impact unmanned and autonomous ships. However, any challenges associated with bringing those persons ashore do not necessarily constitute a problem specific to autonomous and unmanned navigation, but rather affect maritime navigation as a whole. Ultimately, it comes down to a balancing act between the design of cost-effective ships and the capability to effectively render assistance to people in distress. The core question to ask here is whether unmanned ships hold such a distinct status that they cannot reasonably be required to take the relevant preparatory measures that might save people's lives. In this context, MANDRIOLI concludes that '[t]he delicate equilibrium between the use of unmanned ships and the reduction of assistance levels cannot be founded on mere economic perspectives. Otherwise, it would be hard to accept this technological development both from an ethical and juridical point of view, because it maximizes profits minimizing human lives' protection' [30]. Indeed, purely commercial considerations do not hold when contrasted with the humanitarian obligation to rescue lives at sea [31]. In this notion, the argument that autonomous and unmanned vessels are not capable of effectively rescuing people in distress at sea appears to rest on a predominantly commercial perspective rather than a careful assessment of the actual operational capabilities and legal requirements. As will be discussed in the following section, the IMO holds a comparable view on the necessary capabilities of unmanned ships with regard to the duty to render assistance at sea.

B. Search and Rescue in the MASS Code Draft

The current draft of the International Code of Safety for Maritime Autonomous Surface Ships [32] (MASS Code), while still in the development process, grants some insights on the IMO's standpoint on the issue at hand. The MASS Code is structured according to the goal-based approach: Each chapter of the code consists of the overarching Goal of the chapter, general Functional Requirements (FR) to fulfil the Goal, and the Expected Performance (EP) associated with those Functional Requirements. Goals in this context are high-level objectives to be met that should address the issue or issues of concern and reflect the required level of safety [33]. In contrast, Functional Requirements provide the criteria to be complied with in order to meet the outlined goal [34]. The EP associated with the respective FR describes the necessary function in quantitative terms [35]. While these three elements become increasingly more specific, they remain at a more general level compared to the IMO's otherwise rather detailed technical requirements.

The general Goal of the chapter on Search and Rescue of the draft MASS Code is to ensure that the duties and tasks regarding Search and Rescue are fulfilled [36]. The first FR refers to the relevant requirements in SOLAS to provide assistance at sea in general [37]. The second FR provides that a MASS and its associated remote operation centre should be provided with a ship-specific plan and procedures which enable the master to provide assistance to persons in distress when obligated to do so [38]. In this context, EP 1 emphasizes that rescue equipment provided on board should be able to be safely used independently of the presence of a crew [39]. EP 2 requires that persons retrieved on board should be able to be safely accommodated on board until such time as they can be delivered to a place of safety [40]. Finally, EP 3 specifies that persons retrieved on board should be provided with information and arrangements to communicate with the remote operation centre and access any arrangements provided for their safety.

The general notion of the MASS Code's current draft version shows a tendency that the IMO expects unmanned and autonomous ships to be able to retrieve people in need of assistance on board the ship, accommodate them and provide for rescue equipment that can be used independently of the ship's manning. All of these aspects require unmanned ships to make necessary arrangements in advance to be able to effectively render assistance. This shows that in the IMO's view, minimal support measures, such as the mere transmission of a distress signal, are in itself not sufficient to fulfil the duty to render assistance at sea. Rather, ship-specific measures and equipment shall be provided to retrieve persons on board the ship and meet their basic needs until taken to a place of safety. Therefore, it can reasonably be concluded, that the standard for rescuing people in distress is not lowered on behalf of autonomous ships merely due to the fact that the ships are unmanned. On the contrary, unmanned and autonomous ships are still expected to ensure that the necessary measures are taken to effectively rescue people in distress at sea. However, the concrete rescue capabilities that an unmanned ship must have, are – in the nature of the goal-based approach – left to the flag State so long as the ship complies with the functional goals of the MASS Code.

IV. CONCLUSION

The duty to render assistance at sea, enshrined in Article 98 UNCLOS, reflects a long-standing legal tradition and a rule of customary international law grounded in the principles of humanity and reciprocity. The emergence of unmanned ships raises the issue whether these established principles apply to new technologies and the novel mode of shipping. This paper has argued that unmanned vessels must be designed with the duty to render assistance at sea and to rescue persons in distress. Otherwise, the flag State does not meet its due diligence obligation. The IMO also tends to regulate autonomous navigation in this direction. Ultimately, the issue is therefore not one of technical feasibility, but of the level of economic effort required to ensure an adequate capacity to render assistance to people in distress at sea.

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