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Unconventional Law for Unconventional Ships? The Role of Informal Law in the International Maritime Organization's Quest to Regulate Maritime Autonomous Surface Ships

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I. Introduction*

New technologies have regularly been triggers for the creation of new, or the amendment of existing, rules by the International Maritime Organization (IMO),[1] which is the UN specialized agency in the field of shipping.[2] Maritime Autonomous Surface Ships (MASS) – the term used by the Organization to denote ships 'which, to a varying degree, can operate independent of human interaction'[3] – are not novel in this respect. All the same, MASS stand out from previous technological inventions in various respects, notably because their construction and operation involves not one but several emerging technologies, each of which is in itself complex, inchoate and developing at an unprecedented pace. As a result, their regulation poses exceptional challenges, not only in terms of the content of rules but also as regards the regulatory techniques to be deployed to achieve 'the safe, secure and environmentally sound operation'[4] of this new type of vessel.

The IMO's interest in autonomous ships and their regulation is relatively recent but has experienced exponential growth of late. In the span of only half a decade, 'autonomous ships have turned from a non-issue to one of the main regulatory topics' dealt with by the IMO.[5] So far, the main focus of the debate has been on substantive law, while the question of which regulatory techniques are most suitable to integrate MASS in the IMO's legal framework has only been considered at the fringes. The academic debate accompanying the Organization's efforts to regulate MASS in a proactive fashion has thus far equally centred around the content of rules while

* Developments up until 31 March 2021 have been taken into account.

[1] Aldo Chircop, 'Testing International Legal Regimes: The Advent of Automated Commercial Vessels' (2017) 60 German Yearbook of International Law 1, 1.

[2] Convention on the International Maritime Organization (adopted 6 March 1948, entered into force 17 March 1958) 289 UNTS 3 (IMO Convention) art 64.

[3] IMO 'Report of the LEG Working Group on MASS' (29 March 2019) IMO Doc LEG 106/WP.5, Annex, para 3.

[4] IMO 'Report of the Maritime Safety Committee on its Ninety-Eight Session' (28 June 2017) IMO Doc MSC 98/23, para 20.1

[5] Henrik Ringbom, Erik Røsæg and Trond Solvang, 'Introduction' in Henrik Ringbom, Erik Røsæg and Trond Solvang (eds), *Autonomous Ships and the Law* (Routledge 2021) 3.

possible modes of governance were only tangentially discussed.[6] Yet, as '[i]n an age of constant, complex and disruptive technological innovation, knowing what, when, and how to structure regulatory interventions has become more difficult',[7] the question of how to regulate MASS deserves more attention.[8] This is where the present chapter comes in. It probes the normative techniques that seem suitable in the context of MASS by concentrating on the role informal law could play in the IMO's quest to regulate this novel type of vessel – or, in more sloganesque words and in allusion to the title of the book at hand, it explores the (potential) role of unconventional law for unconventional ships.

In a first step, Section II provides a cursory overview as to why MASS differ as a regulatory object from previous technologies that have been the drivers for the adoption of new rules under the auspices of the IMO. This discussion is followed by an account in Section III of the steps undertaken by the IMO so far to bring MASS within its regulatory framework. Section IV demonstrates that the IMO's engagement with informal law is far from novel; rather, informal law has played 'an extremely important part in the functioning of the organization and in the regulation of international shipping' since its inception.[9] The core of this chapter, Section V, enquires into the role that informal law could play in the interpretation of existing treaties with a view to their application to MASS and in the amendment or creation of new rules governing MASS. The IMO's engagement with informal law, considered alongside the advantages ascribed to informal law in the regulation of emerging technologies[10] and the fact that the 'age of treaties'[11] is said to be over,[12] suggests that informal law could take centre stage in the IMO's

[6] Scholarship discussing regulatory techniques for emerging technologies in general or with regard to specific technologies other than MASS is abundant; see, e.g., Gary E Marchant, Braden R Allenby and Joseph R Herkert (eds), *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem* (Springer 2011); Gary E Marchant, Kenneth W Abbott and Braden Allenby (eds), *Innovative Governance Models for Emerging Technologies* (Edward Elgar 2013).

[7] Mark Fenwick, Wulf A Kaal and Erik P M Vermeulen, 'Regulation Tomorrow: What Happens When Technology Is Faster Than the Law?' (2016) 6(3) American University Business Law Review 561, 561.

[8] Admittedly, a discussion of suitable regulatory techniques presupposes a certain understanding of the nature and scope of the substantive issues to be regulated.

[9] Frederic L Kirgis, 'Shipping' in Oscar Schachter and Christopher C Joyner (eds), *United Nations Legal Order*, vol 2 (CUP 1995) 732.

[10] See, e.g., Ryan Hagemann, Jennifer Huddleston Skees and Adam Thierer, 'Soft Law for Hard Problems: The Governance of Emerging Technologies in an Uncertain Future' (2018) 17(1) Colorado Technology Law Journal 37.

[11] In allusion to the (then apposite) opening sentence of Ulf Linderfalk, *On the Interpretation of Treaties* (Springer 2007) 1: 'We live in the age of treaties.'

[12] On the prevailing 'treaty fatigue', see Joost Pauwelyn, Ramses A Wessel and Jan Wouters, 'When Structures Become Shackles: Stagnation and Dynamics in International Lawmaking' (2014) 25(3) European Journal of International Law 733, 739.

efforts to bring MASS within its normative framework. Of course, as the process of regulating MASS is still in its infancy, nothing more than a forecast is possible at the current juncture.

II. MASS posing exceptional regulatory challenges

The world of shipping has experienced tremendous change since the IMO became operational in 1958.[13] According to its self-perception, 'the Organization was kept busy from the start developing new conventions and ensuring that existing instruments kept pace with changes in shipping technology'.[14] As such, the fact that new technologies function as an incubator for the amendment of existing rules, or the adoption of entirely new rules, is not novel. As Chircop notes, '[t]he history of international maritime law is punctuated by game-changing technological milestones'[15] and '[t]he technology of shipping has driven much of the *opus* of the … [IMO]'[16]. Yet, MASS – when looked at from a regulator's perspective – arguably nonetheless differ from past technological innovations, even from those deemed 'revolutionary' at the time of their introduction, such as containers.

First of all, the advent of MASS amounts to a foundational change for the more than 50 treaties for which the IMO is responsible,[17] as it challenges a basic assumption on which they rest: that ships have an onboard crew responsible for the ship's operation and mission.[18] Ship automation technology, which heralds a shift towards ships with a reduced or, in the more distant future, no onboard crew, thus strikes at the heart of these rules.[19] In quantitative terms, this shift implies that the introduction of MASS affects almost every IMO treaty in one way or another.[20] In qualitative terms, the legal issues to be addressed due to the advent of MASS are extremely diverse given the IMO's regulatory reach, which ranges from maritime safety and

[13] Dorota Lost-Sieminska, 'The International Maritime Organization' in Michael Bowman and Dino Kritsiotis (eds), *Conceptual and Contextual Perspectives on the Modern Law of Treaties* (CUP 2018) 909.
[14] IMO, 'Conventions' <www.imo.org/en/About/Conventions/Pages/Default.aspx> accessed 1 April 2021.
[15] Chircop, 'Testing International Legal Regimes' (n 1) 3.
[16] ibid 3-4.
[17] IMO, 'Conventions' (n 14).
[18] See, e.g., IMO, 'Summary of Results of the LEG Regulatory Scoping Exercise for the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 2010' (10 January 2020) IMO Doc LEG 107/8/15, para 17.
[19] See, e.g., IMO 'Summary of Results of the Second Step and Conclusion of the RSE for the International Regulations for Preventing Collisions at Sea 1972 (COLREG)' (6 February 2020) IMO Doc MSC 102/5/3, para 31.
[20] Henrik Ringbom, 'Developments, Challenges, and Prospects at the IMO' in Henrik Ringbom, Erik Røsæg and Trond Solvang (eds), *Autonomous Ships and the Law* (Routledge 2021) 63.

security and the prevention of marine pollution to liability and compensation arising from shipping operations.[21] On top of this, autonomous ships will raise entirely new legal issues that the Organization has not regulated before.[22] Overall, the normative challenges arising from the introduction of MASS are 'expected to be wide-ranging and far-reaching'.[23]

Second, MASS as a technology seems to differ from previous maritime technological inventions. To begin with, MASS are considered a technology that will have a transformative impact on shipping.[24] The view is held that the 'Fourth Industrial Revolution' will 'change the maritime industry as a whole',[25] and that MASS specifically 'require a fundamental "rethink" of shipping in all its aspects', including its regulation.[26] True, throughout the existence of the IMO, new technologies – hailed 'revolutionary' at the time of their roll-out – have surfaced in the maritime world. Think of the introduction in the 1950s and 1960s of radar to avoid collisions, automatic identification systems, refrigeration on board vessels and, most importantly, containers.[27] Yet, MASS differ in several respects when compared with, say, containerisation, which is certainly the technological invention of the 20th century yielding the biggest transformative effect on shipping (and beyond).[28]

One hallmark of MASS is that their construction and operation does not involve one single, relatively simple, technology but several. Artificial intelligence, robotics and information technology are just three tech buzzwords commonly associated with MASS, each of which covers

[21] For the IMO's mandate, see IMO Convention art 2.

[22] Måns Jacobsson, 'What Challenges Lie Ahead for Maritime Law?' in Proshanto K Mukherjee, Maximo Q Mejia and Jingjing Xu (eds), *Maritime Law in Motion* (Springer 2020) 281; for concrete examples, see IMO 'Summary of Results of Analysis of IMO Instruments Under the Purview of the Legal Committee' (13 December 2019) IMO Doc LEG 107/8, para 30.

[23] UNCTAD, *50 Years of Review of Maritime Transport, 1968-2018: Reflecting on the Past, Exploring the Future* (United Nations, 2018), contribution by Dr Cleopatra Doumbia-Henry, President, World Maritime University (WMU), 'Maritime Trade and Transport – An Outlook on the Issues and a Reflection on the Implications for Education and Research' 52.

[24] Donald Liu, 'Autonomous Vessel Technology, Safety, and Ocean Impact' in Dirk Werle and others (eds), *The Future of Ocean Governance and Capacity Development: Essays in Honor of Elisabeth Mann Borgese (1918-2002)* (Brill Nijhoff 2018) 490.

[25] UNCTAD (n 23) 52.

[26] Frank Smeele, 'Switching Off Regulatory Requirements: Flag State Exemptions as a Tool to Facilitate Experiments with Highly Automated Vessels and their Operational Implementation' in Henrik Ringbom, Erik Røsæg and Trond Solvang (eds), *Autonomous Ships and the Law* (Routledge 2021) 69.

[27] Aldo Chircop and Desai Shan, 'Governance of International Shipping in the Era of Decarbonisation: New Challenges for the IMO?' in Proshanto K Mukherjee, Maximo Q Mejia and Jingjing Xu (eds), *Maritime Law in Motion* (Springer 2020) 101.

[28] On how containerization upended the maritime world, see Michael B Miller, *Europe and the Maritime World: A Twentieth-Century History* (CUP 2012) 320 (overview) and chap 9 entitled 'Transformation'.

a myriad of technologies.[29] What is more, these technologies exceed earlier innovations as regards their complexity. While everyone can imagine what a container is (essentially a standardised metal box),[30] the concept of 'autonomy' and the various 'levels of autonomy' remain elusive against the backdrop of differing interpretations and understandings proposed by doctrine and practice at the current juncture – even when solely considering *maritime* systems.[31] Grasping how MASS will ultimately be designed and operated is further complicated by the fact that various applications allowing for increased ship automation are still in the development phase.[32] MASS thus involve technologies that may be qualified as 'inchoate'; that is, belonging to those that 'are far from completely developed', which 'differentiates them from more stable ones'.[33] In this regards, MASS decisively differ from containers, which have not significantly changed since their introduction in the 1950s and for which the current prediction is that '[b]ox sizes will be stable at today's standard' for the next 25 years[34] (this is barely surprising as the very concept is based on standardisation).

A further difference to past innovations is that today's emerging technologies 'are racing forward at a pace of technology development that has never before been experienced in human history.'[35] Indeed, when addressing the significant transformation expected in maritime transport, the acting IMO Secretary-General stated that '[t]he next 10 or 20 years will see as much change as we have experienced in the past 100 years'.[36] These ever-shorter innovation cycles,[37] in turn, accelerate the pace of the 'pacing problem',[38] which denotes the phenomenon

[29] For anecdotical evidence on the number of technologies involved in MASS, see Kevin Heffner and Ørnulf Jan Rødseth, 'Enabling Technologies for Maritime Autonomous Surface Ships' (2019) 1357 Journal of Physics: Conference Series 1, 1.

[30] To be sure, despite being 'so simple a concept', containers triggered tremendous change as 'every other facet of the transport chain was systematically calibrated to handle them': Miller (n 28) 333.

[31] For an overview on various definitions, see, e.g., Bradley Martin and others, *Advancing Autonomous Systems: An Analysis of Current and Future Technology for Unmanned Maritime Vehicles* (Rand Corporation 2019) 5-7.

[32] Carmen Kooij, Alina P Colling and Christopher L Benson, 'When Will Autonomous Ship Arrive? A Technological Forecasting Perspective' (Proceedings of the 14th International Naval Engineering Conference & Exhibition, October 2018) 1.

[33] Daniel Gervais, 'The Regulation of Inchoate Technologies' (2010) 47(3) Houston Law Review 665, 671; inchoate technologies are generally new ones; yet there are indicators next to time, notably that their future use is unpredictable, that social norms in relation to them are in flux and rapidly evolving, that they are not developed by existing firms as part of existing product lines, and that their regulation bears certain risks: ibid, 672-74.

[34] Charles Fenton and others, 'Brave New World? Container Transport in 2043' (Report by TT Club and McKinsey & Company 2018) 13 and 32.

[35] Gary E Marchant, 'Addressing the Pacing Problem' in Gary E Marchant, Braden R Allenby and Joseph R Herkert (eds), *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem* (Springer 2011) 199; see also IMO 'Strategic Plan for the Organization for the Six-Year Period 2018 to 2023' (8 December 2017) IMO Doc A 30/Res. 1110, para 17.

[36] UNCTAD (n 23), contribution by Kitack Lim, Secretary-General, International Maritime Organization (IMO), 'Future Developments in Maritime Transport', 37.

[37] Fenwick, Kaal and Vermeulen (n 7) 562.

[38] Hagemann, Huddleston Skees and Thierer (n 10) 58.

that law usually trails behind technological development.[39] The statement that 'autonomous technology for ships will mature much faster than the development of sufficient … regulations'[40] is to be seen against this background.

All things considered, despite the fact that delegations to the IMO are generally composed of persons with advanced technical knowledge and that non-governmental organizations (NGOs) and intergovernmental organizations (IOs) add expertise,[41] it seems more challenging to identify the technology to be regulated and to discern the regulatory object in the context of MASS than has been the case for previous technological innovations.[42]

III. The IMO's efforts to integrate MASS in its regulatory framework

While today the IMO invests significant resources in analysing how MASS could be integrated in its legal framework, the idea that this new type of vessel is a regulatory object to be dealt with by the Organization is a rather recent one. Ringbom identifies as the 'first trace' of such understanding an information paper on 'The IMO Regulatory Framework and its Application to Marine Autonomous Systems', which was submitted by the United Kingdom and two NGOs in 2015 – a démarche that, however, 'passed largely unnoticed'.[43] Just a year later, the idea was already gaining more traction when various states suggested the inclusion of autonomous ships in the 'Trends, Developments and Challenges' paper.[44] This document, in turn, informed the IMO's Strategic Plan for the 2018-2023 period, which was adopted in 2017 and included a Strategic Direction to '[i]ntegrate new and advancing technologies in the regulatory framework'.[45] At present, this Strategic Direction is mainly implemented through a so-called Regulatory Scoping Exercise (RSE).

[39] Wendell Wallach, *A Dangerous Master: How to Keep Technology from Slipping Beyond Our Control* (Basic Books 2015) 251.
[40] Liu (n 24) 493.
[41] Rosalie P Balkin, 'The IMO and Global Ocean Governance: Past, Present, and Future' in David J Attard, Rosalie P Balkin and Donald W Greig (eds), *The IMLI Treatise on Global Ocean Governance, Volume III: The IMO and Global Ocean Governance* (OUP 2018) 24.
[42] See Fenwick, Kaal and Vermeulen (n 7) 571.
[43] Ringbom, 'Developments, Challenges, and Prospects at the IMO' (n 20) 57-58.
[44] IMO 'Inputs from Member States, IGOs and NGOs to the Development of the Trends, Developments and Challenges' (8 April 2016) IMO Doc SF-WG 2/INF.2.
[45] IMO Doc A 30/Res. 1110, paras 17-19.

The RSE goes back to a proposal submitted by nine states to the MSC in 2017 to 'undertake a regulatory scoping exercise to establish the extent of the need to amend the regulatory framework to enable the safe, secure and environmental operation' of MASS,[46] which was adopted the same year.[47] The Legal Committee (LEG) followed suit in 2018 as did the Facilitation Committee (FAL) in 2019 when they included in their respective agenda a similar output for the treaties coming under their purview.[48] The objective of the exercise, which today extends to more than 40 conventions and protocols,[49] is to better understand whether existing law can accommodate MASS.[50] It is purely 'exploratory' in nature and does not include any drafting exercise.[51] At the time of writing, the RSE is ongoing. As the outbreak of the Covid-19 pandemic brought the work to an abrupt halt, the (ambitious) target completion date of 2020 for the RSE conducted within the MSC and FAL[52] could not be realised.[53] The same is likely to be the case for the 2022 target date set by the LEG[54] given that it adjusts its timetable to the work of the MSC.[55]

All three committees conducting an RSE follow a very similar methodology,[56] which foresees a two-step approach. The first phase involves a provision-by-provision review of each of the selected treaties. The goal is to assess for each provision whether it prevents the operation of MASS; and, if not, whether it can be applied without further ado to MASS or whether it needs to be clarified, amended or complemented.[57] Thereby, a distinction is drawn between four degrees of autonomy: ships with automated processes and decision support having a crew on board, remotely controlled ships having seafarers on board, remotely controlled ships without onboard crew, and fully autonomous ships.[58] While the focus of this first step is on the

[46] IMO 'Maritime Autonomous Surface Ships: Proposal for a Regulatory Scoping Exercise' (27 February 2017) IMO Doc MSC 98/20/2, para 1.
[47] IMO Doc MSC 98/23, para 20.2.
[48] IMO 'Report of the Legal Committee on the Work of its 105th Session' (1 May 2018) IMO Doc LEG 105/14, para 11.8; IMO 'Report of the Facilitation Committee on its Forty-Third Session' (23 April 2019) IMO Doc FAL 43/20, para 19.9.
[49] Ringbom, 'Developments, Challenges, and Prospects at the IMO' (n 20) 58-59.
[50] See, e.g., IMO Doc LEG 106/WP.5, Annex, para 2.
[51] Bureau Veritas, *Guidelines for Autonomous Shipping* (October 2019) sec 3.3.1.
[52] IMO Doc MSC 98/23, para 20.2.11; IMO Doc FAL 43/20, para 19.9.1.
[53] IMO, 'Report of the Maritime Safety Committee on its 102nd Session' (30 November 2020) IMO Doc MSC 102/24, para 5.1.
[54] IMO Doc LEG 105/14, para 11.11.
[55] IMO 'Draft Report of the Legal Committee on the Work of its 107th Session' (1 December 2020) IMO Doc LEG 107/WP.1, para 8.7.
[56] See IMO 'Report of the Legal Committee on the Work of its 106th Session' IMO Doc LEG 106/16 (13 May 2019), para 8.5, and IMO Doc FAL 43/20, para 19.9.2, reporting the decisions to apply the methodology developed by the MSC; in the sake of brevity, only the LEG methodology is referenced in the following.
[57] IMO Doc LEG 106/WP.5, Annex, para 8.
[58] ibid para 4.

substance of the individual rules, the second step considers the instruments as a whole and pertains to the question of how to address the regulatory needs identified during the first phase. Thereby, the choice is limited to four options, which are the development of interpretations, the amendment of existing instruments, the creation of new instruments or none of these options.[59] To keep the exercise manageable, the two-step analysis is undertaken by volunteering member states, either acting individually or as a group; yet all IMO member states, NGOs with consultative status and IOs with observer status were able to comment upon their findings.[60] Since the current chapter focuses on possible regulatory techniques to integrate MASS in IMO's legal framework, the second step of the RSE is of primary interest. We will turn to this issue after an analysis of the role that informal law has played in the IMO so far.

IV. IMO and informal law

Absent a hard and fast definition of 'informal law' and differing understandings of what the concept – oftentimes inadequately referred to as 'soft law'[61] – covers,[62] it is necessary to briefly outline how the term is used in the present chapter. Informal law denotes instruments that fulfil four criteria. First, from the qualifier 'informal' (or 'soft') follows that the instrument does not belong to a recognised source of international law,[63] from which 'formal' (or 'hard') norms emanate. Second, as the word 'law' indicates, only 'normatively worded instruments'[64] – those having a regulatory character – amount to informal law as defined here;[65] that is, instruments governing persons, facts or situations in a general and abstract way ('general-abstract').[66] Excluded from our definition are thus instruments resulting from or involving an application of

[59] ibid para 10.
[60] ibid Appendix 3.
[61] What follows underlines the finding by Joost Pauwelyn, Ramses A Wessel and Jan Wouters, 'Informal International Lawmaking: An Assessment and Template to Keep It Both Effective and Accountable' in Joost Pauwelyn, Ramses A Wessel and Jan Wouters (eds), *Informal International Lawmaking* (OUP 2012) 534, that there is nothing 'soft' in many norms belonging to informal law.
[62] Alan Boyle, 'Soft Law in International Law-Making' in Malcom D Evans (ed), *International Law* (5th edn, OUP 2018) 121.
[63] See, e.g., Anthea Roberts and Sandesh Sivakumaran, 'The Theory and Reality of the Sources of International Law' in Malcom D Evans (ed), *International Law* (5th edn, OUP 2018) 89-118.
[64] Term borrowed from Boyle, 'Soft Law in International Law-Making' (n 62) 121.
[65] This second criterion is necessary since the first one – that 'informal law' must not belong to a source of international law – is insufficient because treaties may govern a specific situation resulting from the application of the law (e.g., a border treaty).
[66] For an incisive description of the elements 'general' and 'abstract', see Edward Yemin, *Legislative Powers in the United Nations and Specialized Agencies* (A. W. Sijthoff 1996) 5-6.

norms to a specific case.[67] Third, despite being informal, these general-abstract norms possess, to varying degrees, normative implications – also termed 'normative effect',[68] 'normative value',[69] 'normative force',[70] 'quasi-legal effect'[71] or 'law-like consequences'[72] – as they 'channel the conduct'[73] or curtail the freedom of the respective addressees. Fourth, states or IOs are either the creator of the instruments or they 'endorse' instruments elaborated by private actors[74] without public authority involvement.[75] The term 'endorsement' is used here to denote acts of states or IOs that express their approval of a given set of norms resulting from exclusively private cooperation and by which the public instrument becomes clothed with a certain degree of public authority. Such 'endorsement' can take various forms – it can, for instance, consist of the issuance of a (non-binding) resolution underlying a commitment to implement a private standard[76] – and some endorsements considerably enhance the normative effects of these instruments.[77]

The IMO, which is at times dubbed a 'standard-setting Organization',[78] definitely engages in 'informal lawmaking' as just defined. As regards the first criterion, Henry writes that the 'IMO's legislative instruments can be classified into two broad categories: those of a formal nature and those which are less formal … The former category includes treaties, the latter recommendations.'[79] She continues to state that actually the only kind of instruments that can be issued by the IMO itself are recommendations.[80] Indeed, even though treaties are facilitated by

[67] What Dina Shelton, 'Soft Law' in David Armstrong (ed), *Routledge Handbook of International Law* (Routledge 2009) 70 terms 'secondary soft law'.

[68] Natalie Klein, 'Meaning, Scope and Significance of Informal Lawmaking in the Law of the Sea' in Natalie Klein (ed), *Unconventional Lawmaking in the Law of the Sea* (OUP 2021) XX.

[69] Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion) [1996] ICJ Rep 254, para 70.

[70] Thomas Gammeltoft-Hansen, 'The Normative Impact of the Global Compact on Refugees' (2018) 30(4) International Journal of Refugee Law 605, 607.

[71] Frederic L Kirgis, 'Specialized Law-Making Processes' in Oscar Schachter and Christopher C Joyner (eds), *United Nations Legal Order*, vol 1 (CUP 1995) 159.

[72] Shelton (n 67) 68.

[73] Kirgis, 'Specialized Law-Making Processes' (n 71) 109.

[74] In international law, the divide between 'public' and 'private' is less clear that in the domestic sphere; here, it is used to refer to actors other than states and IOs.

[75] The definition is thus broader than the one by Joost Pauwelyn, 'Informal International Lawmaking: Framing the Concept and Research Questions' in Joost Pauwelyn, Ramses A Wessel and Jan Wouters (eds), *Informal International Lawmaking* (OUP 2012) 19, requiring 'public authority involvement'.

[76] E.g., the (informal) 'Copenhagen Declaration on Anti-Doping in Sport' by which the 193 signatory states 'signalled their intention to formally recognize and implement the World Anti-Doping Code' elaborated by private actors: WADA, 'Governments' <www.wada-ama.org/en/who-we-are/anti-doping-community/governments#CopenhagenDeclaration> accessed 1 April 2021.

[77] See below text belonging to n 128-134.

[78] See, e.g., Balkin (n 41) 10.

[79] Cleopatra Elmira Henry, *The Carriage of Dangerous Goods by Sea: The Role of the International Maritime Organization in International Legislation* (Frances Pinter 1985) 58.

[80] Henry (n 79) 58.

the Organization, they are ultimately adopted by the member states and thus not attributable to the IMO.[81] By contrast, as per its founding treaty, the IMO is competent to issue recommendations.[82] In theory, a clear dividing line can thus be drawn between formal (in IMO parlance: 'mandatory') and informal (in IMO argot: 'recommendatory' or 'not … mandatory instruments for treaty purposes'[83]) instruments.[84] Yet, in practice, it has not always been obvious to determine in which of these two boxes a given instrument falls and to clearly indicate its legal status.[85]

The term 'recommendations' in Article 2 of the IMO Convention does not refer to a specific type of unilateral act adopted by an organ of the IMO, but rather delineates the Organization's powers.[86] Indeed, recommendations – which come under a variety of names,[87] such as guidelines, guidance, regulations or codes to name but a few – are issued through different types of unilateral acts, most notably resolutions and circulars.[88] Generally, recommendations are included as an annex to the respective unilateral act.[89] In terms of content, not every recommendatory unilateral act of the IMO possesses 'lawmaking' characteristics necessary to fulfil the second criterion of our 'informal law' definition. Rather, unilateral acts may serve other purposes, such as coordinating state action, supporting the implementation of treaties or governing a specific situation.[90]

[81] See IMO Convention art 2(b).Various IMO treaties foresee an accelerated amendment procedure (the so-called tacit acceptance procedure), where, the amendments are adopted by the competent IMO organ and are deemed to be accepted after the expiry of certain period of time, unless a predefined number of states parties objected. States thus accept the amendments through tacit consent (that is, by not opting out): see Doris König, 'Tacit Consent/Opting Out Procedure' (last updated January 2013) in Anne Peters (ed), *Max Planck Encyclopaedia of Public International Law*, online edition <https://opil.ouplaw.com/home/mpil> paras 1 and 9-10.

[82] IMO Convention art 2(a).

[83] IMO 'Uniform Wording for Referencing IMO Instruments' (22 January 2002) IMO Doc A 22/Res.911, preambular paras 1-2.

[84] But see Wilhelm H Lampe, 'The "New" International Maritime Organization and Its Place in Development of International Maritime Law' (1983) 14(3) Journal of Maritime Law and Commerce 305, 318, questioning the binary approach by arguing that IMO Codes 'rank somewhere in between' binding and advisory; similarly, Hélène Lefebvre-Chalain, *La stratégie normative de l'Organisation maritime internationale (OMI)* (Presses universitaires d'Aix-Marseille 2012) 174.

[85] If, for instance, informal law is referenced in IMO treaties; to clarify the effect of such reference on the legal status of informal law (whether it becomes part of the treaty or not), the IMO adopted the 'Guidelines on Methods for Making Reference to IMO and Other Instruments in IMO Conventions and Other Mandatory Instruments': IMO Doc A 22/Res.911, Annex.

[86] Lefebvre-Chalain (n 83) 171.

[87] Henry (n 79) 73.

[88] Thomas A Mensah and Christoph H Zimmerli, 'L'activité réglementaire de l'O.M.C.I.' in Société Française pour le Droit International (ed) *L'élaboration du droit international public* (Éditions A Pedone 1975) 45.

[89] See, e.g., IMO 'Interim Guidelines for MASS Trials' (14 June 2019) IMO Doc MSC.1/Circ.1604.

[90] Henry (n 79) 5.

As regards the third criterion, it would be an exaggeration to state that all IMO recommendations have normative effects.[91] Still, many feature 'more than hortatory design and effect'[92] and some may even possess 'normative significance bordering on authoritative command'[93] with an impact 'virtually equal to … that of treaty obligations'.[94] At times, even draft recommendations feature normative effects.[95] Explanations provided in doctrine for the (sometimes high degree of) normative force of IMO recommendations can roughly be categorised as those relating to the issuer, the process of their adoption and their content.

In terms of the issuer, it is argued that recommendations of the IMO carry 'great weight since no other organization has authority in this field'[96] and that their legal force is due to the 'autorité morale de son auteur'.[97] It is further held that they 'command respect' because UN specialized agencies, such as the IMO, are 'recognized as legitimate by the members'.[98] As we will see later, norms elaborated by private actors – notably by classification societies – play an (increasingly) important role in the IMO's ocean governance model.[99] It is through various 'endorsement' techniques deployed by the Organization, to which we turn shortly,[100] that norms issued through purely private cooperation become clothed with the authority of the IMO, which is essential for their normative effects.

The effectiveness of IMO recommendations is further explained by the characteristics of the process through which they are adopted.[101] Indeed, various commentators stress the 'inclusive approach to regulation-making' pursued by the IMO,[102] that is, that norms are issued in a procedure that provides members with 'a meaningful opportunity to participate'.[103] It is highlighted that IMO organs participating in informal lawmaking meet at regular intervals and follow well-structured work programmes and agenda published in due time, which enable states to make

[91] Henrik Ringbom, *The EU Maritime Safety Policy and International Law* (Martinus Nijhoff 2008) 24.
[92] Kirgis, 'Specialized Law-Making Processes' (n 71) 157; see also 146 where he terms those informal instruments 'super-recommendations' and provides as an example the IDG Code.
[93] Kirgis, 'Shipping' (n 9) 732.
[94] Kirgis, 'Specialized Law-Making Processes' (n 71) 154.
[95] ibid 158 (providing the example of draft recommendations for the removal of disused offshore platforms).
[96] Patricia Birnie, 'The Status of Environmental "Soft Law": Trends and Examples with Special Focus on IMO Norms' in Henrik Ringbom (ed), *Competing Norms in the Law of Marine Environmental Protection – Focus on Ship Safety and Pollution Prevention* (Kluwer Law International 1997) 48.
[97] Lefebvre-Chalain (n 83) 174.
[98] Kirgis, 'Specialized Law-Making Processes' (n 71) 109.
[99] See below text belonging to n 132.
[100] See below text belonging to n 128-134.
[101] See Obinna Okere, 'The Technique of International Maritime Legislation' (1981) 30 International and Comparative Law Quarterly 513, 531.
[102] Balkin (n 41) 25.
[103] Kirgis, 'Specialized Law-Making Processes' (n 71) 159.

written submissions and prepare their delegations.[104] Moreover, emphasis is put on the fact that IMO organs competent to adopt recommendations are open to all member states.[105] Indeed, membership in the IMO is almost universal in the sense that the 174 member states,[106] which include all major maritime nations,[107] represent 97.36% of the world merchant shipping tonnage.[108] What is more, recommendations are, as a general rule, adopted by consensus and thus reflect broad agreement between the member states.[109] The fact that IOs and NGOs – notably representing the shipping sector and environmental interests – actively and successfully[110] participate in the lawmaking process[111] is further said to lead to 'regulations that are balanced, pragmatic, and affordable, making member states in turn more inclined to accept and to implement them'.[112] Overall, this approach echoes the view that a key 'to effective norm-promulgation by codes and guidelines are the care with which they are prepared'.[113]

Lastly, effectiveness of informal law is considered to be higher if it relates to subject matters in which some type of international regulation is largely considered important.[114] As regards IMO recommendations, they have been perceived as 'necessary'[115] – or even 'indispensable'[116] – by the international community to ensure safe, secure and environmentally sound shipping operations. In light of the international dimension of shipping, 'the need for conformity and unity in standards' was recognised early on by the industry,[117] not only to 'maintain a sound image' and 'create a level playing field',[118] but also because of a potential 'sanction of non-

[104] Balkin (n 41) 25-26.
[105] Gaetano Librando, 'The International Maritime Organization and the Law of the Sea' in David J Attard, Malgosia Fitzmaurice and Norman A Martínez Gutiérrez (eds), *The IMLI Manual on International Maritime Law, Volume I: The Law of the Sea* (OUP 2014) 582.
[106] IMO, 'Status of Conventions' <https://wwwcdn.imo.org/localresources/en/About/Conventions/StatusOfConventions/StatusOfTreaties.pdf> accessed 1 April 2021.
[107] Harilaos N Psaraftis and Christos A Kontovas, 'Influence and Transparency at the IMO: The Name of the Game' (2020) 22 Maritime Economics & Logistics 151, 154.
[108] See n 106.
[109] Ringbom, *The EU Maritime Safety Policy and International Law* (n 91) 23; similar Librando (n 105) 582.
[110] Especially NGOs representing business interests, see Aldo Chircop, 'The International Maritime Organization' in Donald R Rothwell, Alex G Oude Elferink, Karen N Scott and Tim Stephens (eds), *The Oxford Handbook of the Law of the Sea* (OUP 2015) 426-27.
[111] For an overview of participating IOs and NGOs, see Psaraftis and Kontovas (n 107) 154-55.
[112] Balkin (n 41) 26.
[113] Kirgis, 'Specialized Law-Making Processes' (n 71) 154.
[114] ibid 159.
[115] Balkin (n 41) 26.
[116] Kirgis, 'Shipping' (n 9) 732.
[117] Lost-Sieminska (n 13) 907.
[118] Birnie (n 96) 48.

participation', such as insurers denying non-compliant vessels coverage or increasing premiums.[119] More broadly, it is argued that non-mandatory IMO instruments are adopted for their 'practical utility'[120] and that the conformity with them is 'motivated not by compulsion but by the idea of mutual benefit'.[121]

In addition to these explanations, it seems possible to argue that effectiveness is enhanced in cases where a link between informal and formal law is established, for example, through references to informal law in treaties. The latter does not refer to incorporation by reference – that is, references in IMO treaties to informal law through which the latter becomes part of the treaty.[122] Rather, certain types of references to informal law in IMO treaties – for instance, in footnotes – do not alter the legal status of the informal instrument. They are generally included with the aim of substantiating a treaty obligation in a specific way. Hence, such references have an impact on the treaty – but also a ripple effect on the informal instrument as its normative force is increased through the linkage with formal law. This effect is described well in the following quotation stemming from IMO guidelines on methods of referencing recommendatory instruments in IMO treaties:

> Such standards and specifications [IMO recommendations] referred to in the footnotes [of IMO treaties] are *not regarded as mandatory instruments for treaty purposes*, since they do not appear in the authentic text of the parent convention and can be updated by the Secretariat as necessary; hence, they do not constitute an integral part of the parent convention. *Nevertheless*, Contracting Governments or Parties to the parent conventions are *obliged to* establish national standards not inferior, or at least equivalent, to those developed by the Organization.[123]

References of this type may also relate to external informal law, that is, instruments developed outside the IMO by private actors, such as the International Organization for Standardization, the International Electrotechnical Commission and, most importantly, the International Association of Classification Societies (IACS).[124]

This brings us to the last element of the informal law definition, which pertains to the actors issuing the respective instrument. While some commentators exclude norms adopted without public authority involvement from informal law,[125] we include them provided that states or IOs

[119] Wolfgang Graf Vitzthum, 'Schiffsicherheit: Die EG als potentieller Durchsetzungsdegen der IMO' (2002) 62 Heidelberg Journal of International Law 163, 166.
[120] Okere (n 101) 530.
[121] David J Padwa, 'The Curriculum of IMCO' (1960) 14(4) International Organizations 524, 534.
[122] This type of reference is described in IMO Doc A 22/Res.911, Annex, paras 2-5.
[123] IMO Doc A 22/Res.911, Annex, para 6 (emphasis added).
[124] ibid para 18.
[125] See above n 75.

'endorse' them. To disregard norms elaborated by private actors would provide an incomplete picture of the normative framework governing the world of shipping. Historically speaking, the improvement of safety at sea was long considered to be a private matter and it was only during the mid-nineteenth century that governments became progressively involved.[126] This legacy still resonates in the IMO where private normative instruments continue to form an important complement to regulations elaborated by the Organization itself.[127]

Within the IMO, various types of 'endorsement' of private instruments can be observed. References in treaties to informal law that do not change the legal status of the latter have already been mentioned. Another type of endorsement is the verification-of-conformity process in the context of so-called Goal-Based Standards (GBS). As the name indicates, GBS do not set out detailed prescriptive rules at the level of the treaty, but only the goal to be attained and the criteria (so-called 'functional requirements') to be satisfied to achieve it.[128] The detailed regulations necessary to implement the GBS, in turn, are developed outside the treaty and, to a certain extent, even outside the IMO, notably through private actors such as classification societies or the industry (for instance, ship builders).[129] Yet, in a verification-of-conformity process, the IMO assesses whether these private rule sets are in line with the goals and functional requirements defined at the level of the treaty.[130] Those deemed to be in conformity are published by the IMO[131] and therewith become an indispensable part of the GBS framework. It is arguably no exaggeration to state that private informal law instruments, which get the 'IMO seal', feature normative effects similar to those of formal law.[132] Yet another type of 'endorsement' is the

[126] Philippe Boisson, 'Law of Maritime Safety' in David J Attard, Malgosia Fitzmaruice, Norman A Martínez Gutiérrez and Elda Belja (eds), *The IMLI Manual on International Maritime Law, Volume II: Shipping Law* (OUP 2016) 180.

[127] See ibid 184.

[128] The first GBS were adopted in the SOLAS Convention: see Chapter II-1, Regulation 3-10, which sets the goal regarding the design and construction of bulk carriers and oil tankers (IMO 'Report of the Maritime Safety Committee on its Eighty-Seventh Session' (30 June 2010) IMO Doc MSC 87/26/Add.1, Annex 4). The functional requirements were defined in a resolution of the MSC (see ibid, Annex 1), which became mandatory through a reference in mentioned SOLAS Regulation.

[129] See IMO 'Generic Guidelines for Developing IMO Goal-Based Standards' (14 June 2011) IMO Doc MSC.1/Circ.1394, Annex, paras 17-18.

[130] IMO Doc MSC.1/Circ.1394, Annex, paras 13-16.

[131] See, e.g., IMO 'Promulgation of Rules for the Design and Construction of Bulk Carriers and Oil Tankers Confirmed by the Maritime Safety Committee to be in Conformity with the Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers' (4 December 2018) IMO Doc MSC.1/Circ.1518/Rev.1, Annex.

[132] As the IACS is a prime norm submitter, it will 'play an even more significant role' in IMO lawmaking: Ismael Cobos Delgado, 'The Role of the Classification Societies in Promoting Global Ocean Governance' in David J Attard, Rosalie P Balkin and Donald W Greig (eds), *The IMLI Treatise on Global Ocean Governance, Volume III: The IMO and Global Ocean Governance* (OUP 2018) 274.

adoption of Unified Interpretations (UIs) by the competent IMO organ,[133] which are based on interpretations previously developed by the IACS.[134]

With this, we have defined the concept of 'informal law' and applied it to instruments issued or 'endorsed' by the IMO. An analysis of informal law*making* focusing solely on the output would, however, be incomplete as informality can also sit with the actors and/or the process.[135] As far as IMO recommendations are concerned, there is little informality with regard to both. Indeed, actors and processes are the same for recommendations and treaties in terms of the submission of a proposal, assessment of the need for a respective outcome, assignment of the task to a body, and elaboration of the text. Only in the final phase – once a decision must be taken whether the text is submitted to a diplomatic conference (treaty) or the competent IMO organ (recommendation) for adoption – does the process start to bifurcate.[136] Private instruments, by contrast, may have been elaborated by actors and in processes featuring a high degree of informality. However, the various 'endorsement' techniques applied by the IMO are standardised to a great extent through non-mandatory IMO instruments, such as the guidelines on referencing informal law in IMO treaties[137] or the verification of GBS.[138] Overall, actor and process informality are not pronounced at all in IMO informal lawmaking, thus distinguishing it from endeavours where actors and processes are (deliberately) not predefined and only specified as the project unfolds ('wait-and-see approach').[139]

To date, the IMO has adopted over a thousand recommendations covering the entire spectrum of the Organization's mandate.[140] It is thus certainly apposite to argue that the IMO has exploited its recommendatory competence to a maximum[141] and participates in the broader trend of international organisations increasingly relying on informal rather than formal law.[142] This

[133] On UIs, see below text relating to n 169 ff.

[134] For a recent example, see DNV, 'IMO Maritime Safety Committee' (11 November 2020) <www.dnv.com/news/imo-maritime-safety-committee-189482> accessed 1 April 2021, as per which the UIs adopted by the IMO were based on unified interpretations elaborated by IACS.

[135] See, e.g., definition by Pauwelyn (n 75) 22.

[136] Henry (n 79) 84; for an overview on the procedure, see 59-60.

[137] See above n 85.

[138] See, 'Revised Guidelines for Verification of Conformity with Goal-Based Ship Construction Standards for Bulk Carriers and Oil Tankers', Annex 3 to IMO 'Report of the Maritime Safety Committee on its One Hundredth Session' (12 December 2018) IMO Doc MSC 100/20/Add.1.

[139] Anna Petrig, 'Democratic Participation in International Lawmaking in Switzerland after the "Age of Treaties"' in Helmut P Aust and Thomas Kleinlein (eds), *Encounters Between Foreign Relations Law and International Law: Bridges and Boundaries* (CUP 2021) 209.

[140] IMO, 'IMO-What It Is, OMI-Ce qu'elle est, OMI-Qué es', 4 <www.imo.org/en/About/Pages/Default.aspx> accessed 15 February 2021.

[141] Lefebvre-Chalain (n 83) 173.

[142] ibid 236.

begs the question what role informal law could play in the context of regulating MASS, to which we turn now.

V. Informal law and MASS

The RSE, which currently is the IMO's main effort in assessing the need to amend the regulatory framework to enable the safe, secure and environmentally responsible operation of MASS, takes as a starting point the treaties for which the Organization is responsible.[143] Against this backdrop, it seems fitting to discuss the potential role of informal law alongside its various functions in relation to treaties. As Boyle stresses, the relationship of informal law to treaties is 'both subtle and diverse'.[144] Indeed, a distinction can be drawn between its post-law, pre-law and para-law functions,[145] depending on whether the informal instrument in question is intended to complement, prepare or take the place of formal law.[146]

First, we explore the post-law function of informal law, that is, its potential role and value in the process of interpreting existing treaties in light of MASS. Second, we sketch how informal law may pave the way for the enactment of new treaty rules (pre-law function) and to what extent it may replace them altogether (para-law function). In doing so, reference is made to views expressed by states and other entities in the course of the RSE. Yet, they must only be understood as exemplary and preliminary as the RSE is ongoing; moreover, at times, views on the appropriate path forward diverge[147] or making a respective choice is deemed premature[148] or requiring a preceding policy decision.[149]

[143] See above Section III.
[144] A E Boyle, 'Some Reflections on the Relationship of Treaties and Soft Law' (1999) 48 International and Comparative Law Quarterly 901, 913.
[145] Linda Senden, *Soft Law in European Community Law* (Hart 2004) 120.
[146] ibid 31.
[147] See, e.g., IMO Doc MSC 102/5/3, paras 16-17 (charts providing overview on chosen options).
[148] See, e.g., IMO 'Summary of Results of the Second Step of the RSE for SOLAS Chapter II-2 and Associated Codes' (17 February 2020) IMO Doc MSC 102/5/19, para 5.
[149] See, e.g., IMO 'Summary of Results of the LEG Regulatory Scoping Exercise for the International Convention on Civil Liability for Oil Pollution Damage, 1992 (1992 CLC)' (8 January 2020) IMO Doc LEG 107/8/2, para 11.

A. Post-law function of informal law: informing the interpretation of treaties

The interim results of the RSE indicate that the integration of MASS in the existing legal framework raises a significant number of legal issues. Some relate to concepts that appear in specific conventions only,[150] while others pertain to terms or elements featuring in several IMO treaties.[151] In the latter group, the concept of 'master' figures prominently,[152] in relation to which, simply put, clarification is needed as to who performs this role and its functions if the vessel is without onboard crew.[153] Another cross-cutting issue pertains to the certificates that ships must carry according to various IMO instruments, notably how they could be requested and produced absent seafarers aboard and what format they could take.[154] Horizontal issues also appear in provisions governing liability; for example, it is unclear what provisions referring to the mental states of human beings who engage in specific conduct (such as 'negligence' or 'intention') imply if a machine rather than a person is acting.[155]

Deliberations by the competent IMO Committees on the most appropriate way forward to address these and further issues have yet to take place;[156] nevertheless, some lines of convergence and divergence can be discerned already at this stage. First of all, interpretation is considered a suitable approach for a great deal of issues[157] and generally deemed a 'lighter' response than amendments[158] 'to accommodate newly developed technologies and increasing automation' in IMO treaties.[159] An exception, though, are the (seemingly rare) instances where

[150] See list in IMO Doc LEG 107/8, paras 13-26.
[151] ibid para 5.
[152] See, e.g., IMO 'Summary of Results of the First and Second Steps of the RSE for the Nairobi International Convention on the Removal of Wrecks, 2007' (20 December 2019) IMO Doc LEG 107/8/1, para 8; IMO Doc MSC 102/5/3, Annex 4, page 1; IMO 'Summary of Results of the Second Step of the RSE for SAR 1979 Convention' (11 February 2020) IMO Doc MSC 102/5/13, paras 20.
[153] IMO Doc 107/8, para 7.
[154] See, e.g., ibid para 12; and IMO 'Summary of Results of the LEG Regulatory Scoping Exercise for the Athens Convention Relating to the Carriage of Passengers and their Luggage by Sea, 2002' (10 January 2020) IMO Doc LEG 107/8/13, para 9.5.
[155] IMO Doc LEG 107/8, para 8.1.
[156] On the schedule of the RSE see above text relating to n 52-55.
[157] See, e.g., IMO Doc MSC 102/5/3, para 21; IMO 'Summary of Results of the LEG Regulatory Scoping Exercise of the International Convention on Salvage, 1989' (10 January 2020) IMO Doc LEG 107/8/11, para 7.4-7.5; IMO 'Summary of Results of the LEG Regulatory Scoping Exercise for the Athens Convention Relating to the Carriage of Passengers and Their Luggage by Sea, 1974' (10 January 2020) IMO Doc LEG 107/8/12, para 7; IMO 'Summary of Results of the Second Step of the Regulatory Scoping Exercise for the International Convention on Tonnage Measurement of Ships, 1969 (TONNAGE 1969)' (10 February 2020) IMO Doc MSC 102/5/8, para 8.
[158] IMO Doc LEG 107/8, para 28.
[159] IMO Doc MSC 102/5/3, para 21.

existing provisions prevent the operation of MASS altogether; solving such hard conflicts appears to require amendment or the creation of new rules.[160] Even where tensions are less pronounced, some participants express a preference for amendment over interpretation for the sake of legal certainty[161] – especially where the respective provisions 'impose obligations on a person'.[162] Views also differ on how to proceed in relation to horizontal issues. Some cautiously suggest that the IMO could pursue an 'overriding' approach to interpretation or amendment;[163] while others express reluctance as the same term may carry different meanings and functions in the various treaties and even in the distinctive provisions of the same treaty.[164]

The RSE methodology does not further specify the option of 'developing interpretations'.[165] From the interim results of the RSE accrues that the option is understood to only entail interpretations undertaken at the international level and not interpretations at the domestic level by individual (flag) states.[166] Yet, so far it has not crystallised whether interpretations will be provided by IMO organs[167] or rather by the states parties to the respective treaty.[168] In terms of tools deployed to achieve a uniform interpretation, reference was made in the course of the RSE to means applied by the IMO in the past and that could apply in the context of MASS too, notably to UIs[169] and guidelines issued by the competent IMO Committees.[170] As regards interpretations adopted by the IMO, two questions are of particular interest in the present context: first, whether they amount to informal law as defined earlier; and, second, what their potential interpretative function and value could be.

As regards the informal law definition,[171] the first criterion – that the instrument must not belong to a formal source of international law – is clearly fulfilled as IMO organs only possess

[160] See, e.g., IMO Doc LEG 107/8, para 27.
[161] See, e.g., LEG 107/8/1, para 7.4.
[162] See, e.g., IMO Doc MSC 102/5/19, para 10.
[163] See, e.g., IMO Doc LEG 107/8, para 5; see IMO Doc LEG 107/8/13, para 9.5.
[164] See, e.g., IMO 'Summary of the Results of the Second Step of the RSE for SOLAS Chapter VI and Associated Codes' (17 February 2020), IMO Doc MSC 102/5/20, para 8.
[165] See IMO Doc LEG 106/WP.5, Annex, para 8.
[166] See, e.g., IMO Doc 'Summary of Results of the LEG Regulatory Scoping Exercise for the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, 1988' (9 January 2020) IMO Doc LEG 107/8/5, para 9, where the suggestion 'that any issues requiring legal interpretation can be made in *domestic* legal systems' (emphasis added) is not made under option one ('developing interpretations') but four ('none of the above as a result of the analysis') of the RSE methodology.
[167] Suggested in, e.g., LEG 107/8/3, para 6.1; and IMO Doc LEG 107/8/11, para 7.4.
[168] See, e.g., IMO Doc LEG 107/8, para 28, vaguely referring to 'joint interpretation'.
[169] See, e.g., IMO Doc MSC 102/5/19, para 8; IMO Doc MSC 102/5/20, para 8; and IMO Doc LEG 107/8/2, para 8.
[170] See, e.g., IMO Doc LEG 107/8/2, para 18.
[171] See above Section IV.

recommendatory powers.[172] For UIs specifically, their non-mandatory character is underlined in a note by the Secretariat, according to which the circulars containing them are 'inviting Member Governments to apply the UIs as appropriate or to use them as guidance and to bring them to the attention of all Parties concerned'.[173] True, consolidated versions of IMO treaties published by the Organization may comprise relevant UIs, but they clearly do not form part of the treaty.[174] Despite being informal, commentators attest that interpretations have certain normative force, as required by the third criterion of our informal law definition. Kirgis, for instance, states that IMO members 'treat committee interpretations as authoritative' and, in cases of disagreement, they would generally request their modification rather than simply flout them.[175] Explanations for the normative effects of IMO interpretative acts echo those provided for IMO recommendations in general. It is, for instance, argued that UIs 'contain valuable explanatory elaborations of the highly technical regulations' and are therefore of 'great practical utility for professional users', such as inspectors.[176] Further, with respect to MASS specifically, it is deemed possible to achieve 'a fairly high degree of uniformity as regards the application of a large number of provisions' through interpretative Assembly resolutions because they are adopted by consensus.[177] Finally, the fourth criterion of the informal law definition, the need for public authority involvement, is undoubtedly also met as IMO organs either issue the interpretations or 'endorse' private interpretations – for example, by recasting unified interpretations developed by the IACS into UIs of the IMO.[178]

The least evident criterion of our definition is the second one – that the instrument contains 'law' or, in other words, governs persons, facts or situations in a general and abstract way. The International Law Commission (ILC) defines interpretation as 'the process by which the meaning of a treaty, including of one or more of its provisions, is clarified'.[179] Clarification of norms occurs, for example, in the process of applying the law to a specific case (interpretation *in concreto*). The content of instruments embodying such interpretation – say, a judgment or a view

[172] As regards the powers of IMO organs in the context of amendments adopted under the tacit acceptance procedure, see above n 81.
[173] IMO 'Comments on Documents LEG 107/9, LEG 107/9/1 and LEG 197/INF.5' (24 January 2020) IMO Doc LEG 107/9/2, para 16.
[174] Proshanto K Mukherjee and Mark Brownrigg, *Farthing on International Shipping* (4th edn, Springer 2013) 276.
[175] Kirgis, 'Shipping' (n 9) 742.
[176] Mukherjee and Brownrigg (n 174) 276.
[177] Jacobssen (n 22) 282.
[178] See above text belonging to n 134.
[179] ILC 'Draft Conclusions on Subsequent Agreements and Subsequent Practice in Relation to the Interpretation of Treaties, With Commentaries' in *Yearbook of the International Law Commission*, vol II, part two (2018) 43.

of a supervisory body – is not general-abstract, but instead could be considered individual-concrete. Thus, it is not 'law' as defined here.[180] Norms are, however, also interpreted in isolation from a specific case (interpretation in the *abstract*). If the result of this interpretative process is enshrined in an informal instrument directed at an indeterminate number of persons and susceptible of repeated application – that is, one of a general-abstract character – it can be deemed to amount to 'law'.

UIs fall in the latter category of interpretation as they are adopted 'to ensure uniform application of technical requirements containing vague expressions or other vague wording open to divergent interpretations, or to provide more specific guidance on certain provisions'[181] absent any link with a concrete situation. Rather, they are 'normatively worded' and could, theoretically, form part of the treaty they complement. The description of UIs by Mukherjee and Brownrigg as 'detailed supplementary texts', which 'serve as an interpretive tool' for those tasked with applying relevant provisions of the Convention[182] is therefore quite fitting.

The general-abstract character is even more pronounced when it comes to guidelines. Unlike UIs, they are usually not limited to the clarification of a specific treaty term. Rather, they are self-standing regulatory instruments that specify or even develop certain aspects or themes appearing in one or several treaties. Thus, for instance, the IMO Guidelines for the Use of Electronic Certificates[183] – which are referenced in the RSE as a regulatory model for addressing the horizontal issue of certificates in the context of MASS[184] – address the use of electronic certificates in a rather comprehensive fashion. After stating the purpose of the guidance and defining key terms, they stipulate rules on the features of electronic certificates, the verification of their content, as well as the notification and acceptance of their use. Since the concept of certificates appears in a range of IMO treaties,[185] the guidelines display their interpretative effect 'horizontally'; by contrast, UIs hone in on a very specific aspect of a treaty with the aim of clarifying and specifying it and thus operate 'vertically'.

[180] See above n 67 on 'secondary soft law', which is excluded from our definition.
[181] IMO Doc LEG 107/9/2, para 16.
[182] Mukherjee and Brownrigg (n 174) 276.
[183] IMO 'Guidelines for the Use of Electronic Certificates' (20 April 2016) IMO Doc FAL.5/Circ.39/Rev.2, Annex.
[184] IMO Doc LEG 107/8/2, para 18.
[185] See IMO Doc FAL.5/Circ.39/Rev.2, Annex, rule 6, referring to three circulars listing the (many) certificates that ships must carry by virtue of different IMO treaties.

The MSC, FAL and MEPC have approved a significant number of UIs in the past,[186] while the LEG has not yet done so;[187] however, it developed interpretations that were ultimately adopted in the form of Assembly resolutions.[188] It did so in cases where 'differing interpretation' existed in relation to a treaty[189] or a specific provision,[190] with the aim to 'remove ambiguity' and assist states to apply the treaty 'in a uniform manner'.[191] As per the IMO Secretariat, 'these resolutions do not generally use declaratory interpretative language'.[192] Indeed, in contrast with UIs and guidelines, not all recommendations comprised in this type of resolution are structured like 'law'[193] and some rather solicit conduct from state parties that furthers the correct implementation of the treaty.[194] Generally speaking,[195] both UIs and guidelines of the sort considered here clearly fulfil the second criterion of our informal law definition – being 'law' – while interpretative Assembly resolutions may have a mixed character. In sum, all three IMO acts considered here – UIs, guidelines and interpretative Assembly resolutions – may be qualified as informal law instruments. This broaches the subject of their potential function and weight in the interpretative process.

Articles 31 and 32 of the Vienna Convention on the Law of Treaties (VCLT)[196] do not expressly refer to informal law as a means of interpretation, yet doctrine and practice lend support to the idea that it informs the interpretative process in a number of ways.[197] First of all, informal law instruments may embody 'a subsequent agreement between the parties regarding the interpretation of the treaty' in the sense of Article 31(3)(a) VCLT. In accordance with the ILC, such

[186] IMO Doc LEG 107/9/2, para 16.
[187] ibid para 17.
[188] ibid para 17.
[189] E.g., IMO 'Issue of Bunkers Certificates to Ships That Are Also Requires to Hold a CLC Certificate' (20 December 2011) IMO Doc A 27/Res.1055, preambular para 6.
[190] E.g., IMO 'Issue of Bunkers Certificates to Bareboat-Registered Vessels' (18 January 2010) IMO Doc A 26/Res. 1028.
[191] IMO Doc A 26/Res. 1028, preambular paras 4-6; IMO Doc A 27/Res.1055, preambular para 7.
[192] IMO Doc LEG 107/9/2, para 17, referring, *inter alia*, to the instruments cited in n 189 and 190.
[193] 'Law'-like is, e.g., IMO Doc A 27/Res.1055, para 1.2, recommending that states parties 'require ships … to be insured and to hold a bunkers certificate as prescribed by the Bunkers Convention even when the ships concerned already hold a CLC certificate'.
[194] See, e.g., IMO Doc A 27/Res.1055, para 1.3, recommending that states parties 'avoid taking action that could cause unnecessary bureaucracy'.
[195] Ultimately, each instrument must be considered separately to assess whether its content amounts 'law'.
[196] Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT).
[197] André Nollkaemper, 'The Distinction Between Non-Legal and Legal Norms in International Affairs: An Analysis with Reference to International Policy for the Protection of the North Sea from Hazardous Substances' (1998) 13(3) The International Journal of Marine and Coastal Law 355, 364.

agreements 'contribute, in their interaction with other means of interpretation, to the clarification of the meaning of a treaty'.[198] Such clarification may notably consist of narrowing or widening the range of possible interpretations[199] and indicating whether the parties intended to provide a given term with a meaning 'capable of evolving over time'.[200] Since subsequent agreements are 'objective evidence of the understanding of the parties as to the meaning of the treaty',[201] they are considered authentic interpretations.[202] As a result, although not being conclusive in the sense of overriding all other means of interpretation,[203] they play an 'important role'[204] and 'possess a specific authority' in discerning the meaning of the treaty.[205] As a rule of thumb, the greater their clarity and specificity, the more interpretative weight they have.[206]

To determine whether UIs, guidelines and interpretative Assembly resolutions qualify as subsequent agreements, three elements must be considered, which relate to the issuer, the agreement and the time. As regards the latter, only 'subsequent' agreements fall under Article 31(3)(a) VCLT, that is, those reached after the text of the treaty to be interpreted has been established as definitive.[207] Since the RSE relates to treaties already adopted or in force, potential prospective interpretations clearly fulfil this temporal requirement. The crux rather lies in the issuer of the interpretations. The wording of Article 31(3)(a) VCLT indicates that the agreement must be reached between all the parties to the treaty in question;[208] though the ILC acknowledges that decisions adopted by a conference of states parties – representing a 'particular form of action by States'[209] – may also embody a subsequent agreement.[210] Yet, only conferences where states act on their own behalf qualify, not conferences that are actually an organ

[198] ILC (n 179) 51, Conclusion 7(1).
[199] ibid.
[200] ibid 64, Conclusion 8.
[201] ibid 23, Conclusion 3.
[202] Robert Kolb, *The Law of Treaties* (Edward Elgar 2016) 130-31, authentic in the narrow sense, meaning interpretations adopted jointly by all parties to the treaty.
[203] As per Article 31(3) VCLT, they shall solely 'be taken into account' in the interpretation of the treaty, which consists of a 'single combined operation' with no hierarchy among the various means of interpretation mentioned in the provision: ILC (n 179) 17, Conclusion 2(5), 24-25, and 51.
[204] ibid 23.
[205] ibid 24.
[206] ibid 70, Conclusion 9(1).
[207] ibid 27; agreements concluded in close temporal connection with the treaty itself fall under Article 31(2)(a) VCLT.
[208] ibid 28; on authentic interpretation being a prerogative of the parties to the treaty, see Oliver Dörr, 'Article 31' in Oliver Dörr and Kirsten Schmalenbach (eds), *Vienna Convention on the Law of Treaties: A Commentary* (2nd ed Springer 2018) 570.
[209] ILC (n 179) 82.
[210] ibid 82, Conclusion 11(2).

of an IO in which states act in their capacity as member of that organ.[211] Unlike other international institutions where there is complete convergence between the members of the organ and the states parties to the treaty establishing the organ,[212] the two circles do not overlap in our case as none of the IMO treaties have been ratified by all 174 IMO members and some only by a very small fraction of members.[213] Thus, the difference between the two potential adopters of interpretations not only exists conceptually, but materially as well. As in IMO practice, UIs, guidelines and Assembly resolutions are approved by the Organization's organs and not by the states parties to the treaty subject to interpretation,[214] they cannot amount to subsequent agreements in the sense of Article 31(3)(a) VCLT.[215] However, various treaties for which the IMO is responsible foresee conferences of the former type where states – in their capacity as parties to that treaty – meet for purposes of its implementation and development.[216] Some conferences have issued interpretative resolutions in the past, which the IMO Secretariat qualified as subsequent agreements.[217] In a nutshell, to amount to a subsequent agreement in the sense of Article 31(3)(a) VCLT, it must be reached by the states parties of the treaty to be interpreted rather than the IMO organ. However, to keep organisational efforts reasonable, such conference of states parties could be held in conjunction with a session of the IMO Committee under the purview of which the respective treaty falls. Importantly, however, when adopting the respective decision, states must cast their vote as a member of the conference of states parties, rather than as a member of the respective IMO organ.[218]

Leaving aside the question of the issuer, we briefly turn to the agreement itself. From a formal point of view, an agreement in the sense of Article 31(3)(a) VCLT 'may, but need not, be legally binding' and can thus be an informal law instrument.[219] However, such agreement must be reached, thus presupposing a 'deliberate common act'[220] about which the parties are aware and

[211] ibid 82-83.

[212] E.g., the International Whaling Commission, which the ILC considers to be 'a borderline case' between the two categories of conferences explained earlier: ibid 83.

[213] Thus, e.g., only 17 states are party to the Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material: see IMO 'Status of Conventions' (n 106).

[214] For UIs specifically, see IMO Doc LEG 107/9/2, para 16.

[215] ibid para 18.

[216] See, e.g., Article 18 of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

[217] Georg Nolte, 'Part 5: Reports for the ILC Study Group on Treaties over Time, Report 3: Subsequent Agreements and Subsequent Practice of States Outside of Judicial and Quasi-Judicial Proceedings' in Georg Nolte (ed), *Treaties and Subsequent Practice* (OUP 2013) 370.

[218] IMO Doc LEG 107/9/2, para 18.

[219] ILC (n 179) 75, Conclusion 10(1); see 92-93 with regard to interpretative resolutions by Conferences of States Parties specifically.

[220] ibid 30.

which they accept.[221] Importantly, consensus – the dominant decision-making mode in the IMO context[222] – only implies that the act was endorsed through non-objection, which does not necessarily mean that there is unanimity regarding its content.[223] From a substantive point of view, the agreement must relate to the interpretation of the treaty;[224] hence, parties must intend to clarify the meaning of a treaty.[225] The closer an agreement is intertwined with a treaty – ideally, it contains a reference linking the two[226] – the easier it is to argue that it *relates* to the interpretation of a treaty and the higher its interpretative weight.[227] As regards UIs, in addition to their denomination pointing to their interpretative character, their title and introductory paragraphs generally mention the treaty (and at times even the provision) to which they relate and, moreover, indicate that the purpose of their approval is to provide guidance in the application of the respective provision.[228] Assuming, *arguendo*, they are adopted by the states parties to the respective treaty rather than an IMO organ,[229] they can be said to embody the 'common understanding regarding the interpretation of a treaty which the parties are aware of and accept'.[230] Consequently, and not least because of their high degree of clarity and specificity, they would have considerable weight in the interpretative process. Guidelines of the sort discussed here, by contrast, generally do not interpret a specific provision or treaty term, but rather set out fine-grained rules on a specific problem. Thus, they do not primarily have a post-law function (let alone could be considered as subsequent agreements),[231] but rather a pre- or even para-law function.[232] Finally, interpretative Assembly resolutions clarify issues in relation to a specific treaty; yet, as per the IMO Secretariat, they 'never clearly indicate that they express the agreement of the parties or that they are adopted by them'.[233] Even if, *arguendo*, the states parties to a treaty would have adopted them, rather than an IMO organ, their content has not been such in the past as to amount to a subsequent agreement in the sense of Article 31(3)(a) VCLT. Yet, they may nevertheless be considered in the interpretative process – notably as supplementary

[221] ibid 75, Conclusion 10(1).
[222] Henry (n 79) 18.
[223] ICL (n 179) 90-1.
[224] ibid 43, Conclusion 6(1).
[225] ibid 30-31.
[226] ibid 31.
[227] ibid 45.
[228] See, e.g., IMO 'Unified Interpretations of the IGC Code (as Amended by Resolution MSC.370(93))' (28 November 2016) IMO Doc MSC.1/Circ.1559, para 1.
[229] Currently, a discussion is taking place in the LEG as to whether an UI on the test for breaking the owner's right to limit liability should be adopted by the LEG or by the states parties: see, IMO Doc LEG 107/WP.1, para 9.11-9.14.
[230] ICL (n 179) 75, Conclusion 10(1).
[231] But see below on VCLT art 31(3)(c).
[232] See, e.g., IMO Doc FAL.5/Circ.39/Rev.2, Annex, rule 2.
[233] IMO Doc LEG 107/9/2, para 17.

means in the sense of Article 32 VCLT,[234] which the interpreter, however, is not obliged to take into account.[235]

Moreover, informal law instruments adopted by the IMO may enter the interpretative process through Article 31(3)(c) VCLT, which stipulates that 'any relevant rules of international law applicable in relations between the parties' shall be taken into account. This norm, which lays the groundwork for the systemic approach to interpretation by referring to the entire international legal system as part of the context,[236] is construed very narrowly by some and quite broadly by others. Understood in an orthodox fashion, the words 'rules of international law' only refer to formal sources of international law;[237] by contrast, parts of the international judicial system[238] and various commentators[239] include informal law. It seems, though, that the word 'rule' in Article 31(3)(c) VCLT dictates that only instruments of general-abstract character, which are self-standing, qualify – such as the IMO guidelines considered above. UIs and interpretative Assembly resolutions, however, are linked to the treaty to be interpreted and therefore do not amount to rules *external* to the treaty to be interpreted.

To conclude, it has been demonstrated that informal law instruments of the IMO – notably UIs, guidelines and interpretative Assembly resolutions – inform the interpretative process in a number of ways and thus have an important post-law function. As the methodology of the RSE comprises, in addition to 'developing interpretations', the options of 'amending existing instruments' and 'developing new instruments' as possibilities to address legal issues raised by MASS, we now turn as a final step to this scenario. Concretely, we sketch the role informal law may play in paving the way for the enactment of new, formal rules (pre-law function) and to what extent it may even substitute formal law altogether (para-law function).

[234] ILC (n 179) 90.
[235] See VCLT art 32: 'Recourse may be had…'.
[236] Dörr (n 208) 603.
[237] See, e.g., Mark E Villiger, *Commentary on the 1969 Vienna Convention on the Law of Treaties* (Martinus Nijhoff Publishers 2009) 433.
[238] For examples, see Dörr (n 208) 608.
[239] See, e.g., Anne Peters, 'The Refinement of International Law: From Fragmentation to Regime Interaction and Politicization' (2017) 15(3) International Journal of Constitutional Law 671, 693 (no conclusive stance).

B. Pre- and para-law function of informal law: paving the way for or even replacing treaties

To overhaul the IMO's legal framework in a timely and sensible fashion to accommodate the turn to MASS is a daunting challenge.[240] As demonstrated earlier, the regulation of MASS is far from obvious as they involve not one but several emerging technologies – each of which features a high degree of complexity, is inchoate and moves through the various innovation stages at a fast pace.[241] As a consequence, determining what, when and how to regulate is formidably difficult.[242] Moreover, as 'technological transition is going to be a permanent state in the age of disruptive innovation',[243] the law must also be updated continuously to keep it abreast of change. This scenario seems to suggest that, at least to some extent, recourse is had to regulatory processes and techniques, which are characterised by their speed, adaptability and flexibility.

The identification of the technology to be regulated – the 'what question' – is far from evident in the context of emerging technologies.[244] For MASS specifically, it is too early, at the current juncture, for a reliable forecast about the ultimate results of the technological transition, notably as regards the level of autonomy and forms of MASS that will become the industry standard.[245] Experience with this new kind of vessel is still very limited,[246] as too is our imagination.[247] As a result, it is hard to foresee the type and scope of issues that the construction and operation of MASS will ultimately raise.[248] For the time being, it thus seems impossible to regulate MASS at the 'front end'[249] by pursuing a fully fact-based approach,[250] as is the case for other emerging technologies as well.

The next step, which is as equally difficult as the identification of the technology to be regulated and closely connected with it, is the determination of the timing of a regulatory intervention – the 'when question'.[251] Premature regulation carries the risk of rules that are poorly

[240] Smeele (n 26) 70.
[241] See above Section II.
[242] Fenwick, Kaal and Vermeulen (n 7) 561.
[243] ibid 573.
[244] ibid 571.
[245] Smeele (n 26) 70.
[246] Jacobssen (n 22) 283.
[247] Fenwick, Kaal and Vermeulen (n 7) 574.
[248] Smeele (n 26) 70.
[249] See Marchant, 'Addressing the Pacing Problem' (n 35) 201.
[250] See Fenwick, Kaal and Vermeulen (n 7) 576-77.
[251] ibid 571-72.

aligned with the ultimate technology and may 'inappropriately "lock in" inferior technological choices'.[252] Moreover, the rules may already be 'ossified'[253] and in need of an update at the very moment of their entry into force as they relate to an anticipated rather than eventual result of a given technological transition.[254] Smeele describes the problem by drawing on maritime metaphors and writes that '[i]n the absence of the … dot on the horizon to navigate toward, at present it seems premature to embark upon a comprehensive overhaul of maritime law'.[255] Engaging in such an endeavour now may entail the risk that 'the beacons are moved too early and will have to be moved again before long'.[256] Timing is further complicated by the fact that regulation requires a certain sense of imminence. Sufficient support for regulation can usually only be garnered once the use of a given technology is considered to be forthcoming and thus jolted 'from the abstract into the concrete'.[257] Yet, within the IMO, this sense of imminence may vary starkly between member states and may explain why states at the helm of MASS development were among the first to voice the need for timely regulation.[258] All in all, it seems well-advised for the IMO not to engage in any rash regulatory action. Yet, at the same time, a delayed regulatory response equally harbours risks. A 'Wild West' of regulatory uncertainty[259] may notably impede research and hamper innovation,[260] which, in turn, delays or blocks new (beneficial) technologies.[261] Moreover, regulation in force may prohibit the introduction of a new technology altogether, though this seems to be rare with regards to IMO treaties.[262] Still, if there is no prospect for timely regulation, flag states leading the MASS development may adopt their own guidelines[263] or partake in regional regulatory initiatives,[264] which may jeopardise the leadership role of the IMO[265] and the required harmonisation of shipping regulation.[266] In addition, the time necessary to integrate MASS into the IMO's legal framework –

[252] Gary E Marchant, 'The Growing Gap Between Emerging Technologies and the Law' in Gary E Marchant, Braden R Allenby and Joseph R Herkert (eds), *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem* (Springer 2011) 27.
[253] See Marchant, 'The Growing Gap Between Emerging Technologies and the Law' (n 252) 24.
[254] See Fenwick, Kaal and Vermeulen (n 7) 572.
[255] Smeele (n 26) 70.
[256] ibid.
[257] Neil C Renic, 'Autonomous Weapons Systems: When Is the Right Time to Regulate?' (Humanitarian Law & Policy, 26 September 2019) <https://blogs.icrc.org/law-and-policy/2019/09/26/autonomous-weapons-systems-right-time-regulation/> accessed 1 April 2021.
[258] See, e.g., the states that proposed the RSE: IMO Doc MSC 98/20/2.
[259] Hagemann, Huddleston Skees and Thierer (n 10) 96.
[260] Concern expressed in IMO Doc MSC 98/20/2, para 11.
[261] Marchant, 'The Growing Gap Between Emerging Technologies and the Law' (n 252) 25.
[262] See above text relating to n 160.
[263] According to IMO Doc MSC 98/20/2, para 9, this happened already to some extent.
[264] Henrik Ringbom, 'Legalizing Autonomous Ships' (2020) 34 Ocean Yearbook, 431, 447-48.
[265] This role is stressed in, e.g., IMO Doc A 30/Res. 1110, Annex, para 2.
[266] See, e.g., IMO Doc MSC 98/20/2, para 19.

estimates range from 8 to 20 years[267] – must also be factored in when discussing timing. There is thus much to suggest that there is no time to waste. To conclude, the IMO is – paradoxically – being advised simultaneously to wait and to hurry.[268]

Turning to the 'how question', the foregoing suggests that the governance of emerging technologies requires regulatory processes and tools that allow for permanent re-evaluation and revision in order to integrate new facts and relevant experience.[269] Formal lawmaking, which in our context means treaty-making by states using the governance structures of the IMO, is hardly suitable to ensure the 'adaptivity and responsiveness'[270] of the law.[271] Rather, making and amending treaties is a notoriously slow and rigid process, which is no different for the IMO[272] – as has been highlighted in the context of MASS regulation specifically.[273] By contrast, informal lawmaking is associated with the characteristics of adaptive governance,[274] including for informal law of the IMO[275] despite its rather low degree of informality.[276] Compared with formal law, its amendment is considered to be faster and easier, thus making it a suitable means for a 'continuing dialogue'.[277] Such continuity is necessary if we subscribe to the idea that technical transition will be a permanent state and MASS does not belong to those technologies that are stable and do not change considerably after their introduction to the market – such as, for instance, the game-changing innovation of containers.[278] Moreover, at times, the informal law instrument itself foresees its review; with this, the instrument is set in motion allowing it to move forward with the technological transition. Thus, for instance, the MSC agreed 'to keep the Interim Guidelines under review and to amend them in view of the experience gained with their application'.[279] In light of these characteristics, it is just a small step to conclude that 'the

[267] Liu (n 24) 493; Smeele (n 26) 70.
[268] Smeele (n 26) 70.
[269] Marchant, 'Addressing the Pacing Problem' (n 35) 201-02.
[270] ibid 200.
[271] See, e.g., Gregory C Shaffer and Mark A Pollock, 'Hard Versus Soft Law in International Security' (2012) 52(4) Boston College Law Review 1147, 1163.
[272] Even though the tacit acceptance procedure (see above n 81) has 'greatly sped up the amendment process': Lost-Sieminska (n 13) 917.
[273] See, e.g., Robert Veal and Michael Tsimplis, 'The Integration of Unmanned Ships into the *Lex Maritima*' [2017] Lloyd's Maritime & Commercial Law Quarterly 303, 333; Chircop, 'Testing International Legal Regimes' (n 1) 31.
[274] See, e.g., Shaffer and Pollock (n 271) 1163.
[275] Lefebvre-Chalain (n 83) 235.
[276] See above text relating to 139.
[277] Hagemann, Huddleston Skees and Thierer (n 10) 104.
[278] See above text relating to n 30-34.
[279] IMO Doc MSC.1/Circ. 1604, para 2.

age of "hard law" governance of new technologies will continue to wane, and soft law governance will become the new norm for many technologies'[280] or that '[t]he era of hard law governance appears to be fading and the age of soft law is firmly underway'.[281]

Indeed, the characteristics ascribed to informal law make it a regulatory tool capable of mitigating – albeit not necessarily solving – problems associated with the regulation of emerging technologies. To begin with, an informal lawmaking process is a tool to get the normative ball rolling. As Boyle has noted, it provides an 'effective starting point when States need reassurance before commencing novel and previously unregulated activities'[282] – as seems to be the case for the construction and operation of MASS.[283] Moreover, informal law is praised as a means to 'consolidate political opinion'[284] and find 'common ground'[285] as regards the need for action in a new field,[286] which may be necessary in the present context since views among states about the need to establish new rules for MASS differ at times.[287] In this vein, it has been argued that one of the benefits of the adoption of the IMO Interim Guidelines for MASS Trials in June 2019 is that they impliedly recognise the advent of this new type of vessel and that existing law does not fully accommodate them.[288] By paving the way for a (thicker) normative framework applying to MASS, informal law emerges here in its pre-law function.

Further, informal law is a tool that allows experiences to be collected in a new field, which can later be used to adapt and enhance the regulatory framework accordingly. In the IMO context specifically, informal instruments often serve as 'testing grounds for regulatory concepts', which – if successful – may later be imported into formal law.[289] In order to ensure this feedback loop function of informal law, IMO instruments at times expressly invite relevant actors to report back 'the results of the experience gained from the use' of the respective instrument.[290] Informal law thus has the potential to fill, at least to some extent, the lack of experience – both as regards the technology and the best way(s) to regulate it – which is another facet of its pre-law function.

[280] Hagemann, Huddleston Skees and Thierer (n 10) 38; on the 'governance shift', see also 40-42.
[281] ibid 129.
[282] Boyle, 'Soft Law in International Law-Making' (n 62) 130.
[283] See IMO 'Comments and Proposals for Interim Guidelines for MASS Trials' (28 February 2019) IMO Doc MSC 101/5/1, para. 3
[284] Shelton (n 67) 72.
[285] Lefebvre-Chalain (n 83) 240 ('terrain d'entente').
[286] Birnie (n 96) 32.
[287] See, e.g., IMO Doc LEG 107/8/5, para 9.
[288] Smeele (n 26) 73.
[289] Lampe (n 84) 318.
[290] See, e.g., IMO Doc FAL.5/Circ.39/Rev.2, para 4.

Informal law is, moreover, understood as a temporary solution until firmer commitment is possible,[291] be it in the form of more detailed informal law or even formal law. Hence, for instance, in the process leading to the adoption of the Interim Guidelines for MASS Trials, it was argued that the instrument may amount to 'a potential interim first step to new international regulations' in the field.[292] The preliminary results of the RSE equally demonstrate that informal instruments are, *inter alia*, perceived as an 'interim measure' on the path leading to a comprehensive and detailed regulation of MASS.[293] Indeed, in the past, the IMO repeatedly relied on informal law to regulate temporarily new types of crafts not previously addressed by the Organization's legal framework until the time for a treaty solution was ripe. This strategy preempted diverging flag state solutions,[294] which is seen as a risk in the context of MASS if the IMO does not regulate in a timely fashion. Being a first step towards a bolstered legal framework and in functioning as a placeholder, informal law not only has a pre- but also a para-law function.

Yet, relegating the para-law function of informal law to the role of providing solely temporary solutions seems mistaken. Rather, there are prospects that it will, to some extent, substitute formal law altogether and take a firm place in the regulation of MASS. The RSE foreshadows various scenarios of how informal law could complement the body of IMO treaties, which seamlessly fit into the Organization's previous use of and reliance on internal and external informal law.[295] For one, it is suggested to accommodate MASS through the development of non-mandatory instruments by the IMO itself, notably in the form of guidelines[296] or codes.[297] Yet, external informal instruments elaborated by private actors could play an equally important role, if not take centre stage entirely. As noted, the IMO deploys various 'endorsement' techniques to link private rules with its own rules without changing their informal nature. While references in IMO treaties to external informal law is one option, the Organization has established a systematic relationship between its treaties and private informal law through the GBS framework.[298] With regard to MASS – as holds true for other emerging technologies[299] – high hopes

[291] Lefebvre-Chalain (n 83) 240.
[292] IMO Doc MSC 101/5/1, para. 3.
[293] See, e.g., IMO Doc MSC 102/5/3, para 36.3.
[294] Henry (n 79) 76, providing the example of dynamically supported crafts.
[295] See above Section IV.
[296] See, e.g., IMO Doc LEG 107/8/2, para 18.
[297] See, e.g., IMO 'Summary of the Results of the Second Step of the RSE for SOLAS chapter XII and Associated Standards' (17 February 2020) IMO Doc MSC 102/5/22, para 9.
[298] See above text relating to n 128-132.
[299] See, e.g., Martin Ebers, 'Regulating AI and Robotics: Ethical and Legal Challenges' in Martin Ebers and Susana Navas (eds), *Algorithms and Law* (CUP 2020) 97.

are placed on a goal-based approach to regulation, which is deemed more likely to withstand the passage of time than prescriptive rules.[300] Indeed, the Organization has been urged to develop a goal-based understanding of the main regulatory issues pertaining to MASS.[301] Classification societies, for their part, are likely to be one of the main providers of rules and were quick to embrace this new type of vessel and have already issued various sets of rules relating to MASS.[302] Increased reliance on GBS could give classification societies, including the IACS, considerable weight in the regulation of MASS.

VI. Conclusion

Given its characteristics, informal law seems in various respects suitable – often more so than formal law – to respond to legal issues raised by emerging technologies in general and by MASS specifically. As demonstrated, beyond its potential to pave the way for a timely and sensible regulation of this new type of vessel in the long run, it is very likely that informal law will be a cornerstone of this legal framework. In addition, informal law informs the interpretative process in a number of ways, which is yet another approach for contributing to the quest of keeping IMO treaties abreast of time. All things considered, the answer to the question raised in the title of this chapter is somewhat self-evident: it is more than likely that unconventional law will play a key role in the regulation of unconventional ships, to which MASS certainly belong – at least for the time being.

[300] IMO 'Strategic Themes in MASS Perspective' (10 March 2020) IMO Doc MSC 102/INF.17, para 7.

[301] IMO 'List of Common Potential Gaps/Themes Identified During the First Step of RSE for STCW Convention and Code, STCW-F, SOLAS, ISM Code, TONNAGE 1969, LL 1966, LL PROT 1988, IS Code, III Code, COLREG and SAR 1979' (10 February 2020) IMO Doc MSC 102/5/7, paras 11-12, 15, 17.

[302] See, e.g., ClassNK, *Guidelines for Automated/Autonomous Operation on Ships* (January 2020); Bureau Veritas, *Guidelines for Autonomous Shipping* (October 2019); China Classification Society, *Guidelines for Autonomous Cargo Ships* (October 2018); DNV GL, *Class Guideline: Autonomous and Remotely Operated Ships* (September 2018).