



International Relations and Defence Committee

Corrected oral evidence: UNCLOS: fit for purpose in the 21st century?

Wednesday 10 November 2021

10 am

Watch the meeting

Members present: Baroness Anelay of St Johns (The Chair); Lord Anderson of Swansea; Baroness Blackstone; Lord Campbell of Pittenweem; Baroness Fall; Baroness Rawlings; Lord Stirrup; Baroness Sugg; Lord Teverson.

Evidence Session No. 5

Heard in Public

Questions 38 - 50

Witness

I: Commander Caroline Tuckett, Lead Legal Adviser, International Law, Royal Navy.

USE OF THE TRANSCRIPT

1. This is a corrected transcript of evidence taken in public and webcast on www.parliamentlive.tv.

Examination of witness

Commander Caroline Tuckett.

Q38 **The Chair:** Good morning. I welcome to this meeting of the International Relations and Defence Committee in the House of Lords Commander Caroline Tuckett, who is the Royal Navy's lead legal adviser on international law. Thank you for joining us today to contribute your expertise to our inquiry on the United Nations Convention on the Law of the Sea. We are questioning whether it is fit for purpose in the 21st century.

At this stage, I always remind my colleagues and witnesses that the session is broadcast, on the record and transcribed. I also remind colleagues that when they ask their questions they should first declare any relevant interest.

As ever, I shall begin by asking the first question, which tends to be rather general in nature, before turning to my colleagues, who will ask more focused questions. They may choose to ask a supplementary at that stage. If there is time at the end, I will invite my colleagues to ask further, perhaps wider, supplementaries, but they must be on the issue to hand.

How does the Royal Navy enforce the international law of the sea, including navigational freedoms, and prevent threats to maritime security? Does the current law of the sea adequately address new and emerging threats?

Commander Caroline Tuckett: Thank you for the invitation to come and speak today. It is an honour to be here.

You asked how the Royal Navy enforces the law of the sea. First, it is worth emphasising that the United Nations Convention on the Law of the Sea is an example of international consensus on how to use the oceans lawfully and gives coastal states certain rights and responsibilities in controlling aspects of the ocean.

The United Kingdom supports a rules-based international system, and the Royal Navy plays a part in that because we adhere to UNCLOS at all times. Although we enforce certain aspects at sea, more important for us as a navy is that we rely on the convention because it provides certain navigational rights and freedoms in order for us to operate. Without it, we would not for example be able to conduct innocent passage in the territorial seas of another state.

It is absolutely right that some states make claims on the ocean that are disputed by the United Kingdom. There are times when a Royal Navy warship will be sent to sail through those waters to demonstrate a legitimate use of those waters and, crucially, on the international level, that the United Kingdom has not acquiesced to a claim that we consider incorrect.

We also contribute to enforcement of the law of the sea through specific operations. A good article, which is a favourite for all naval lawyers, is Article 110, which provides warships and government vessels with the ability to board and inspect vessels on the high seas. That specific privilege is granted only to warships and government vessels. It is an article that we use all the time in our operations.

You asked whether the law of the sea is ready to address new and emerging threats. For the Royal Navy and the United Kingdom, UNCLOS demonstrates state responsibility. If a state signs up to UNCLOS, it is signing up to a list of provisions that regulate the use of the sea. The problem is that we are reliant on the willingness of states to follow the provisions of UNCLOS.

UNCLOS itself is an overarching framework. It was never designed to address emerging threats, such as terrorism. Underneath UNCLOS, we have other treaties and conventions, such as the convention for the suppression of unlawful acts at sea, that are better focused on dealing with that kind of threat. From the Royal Navy perspective, UNCLOS is fit for purpose because it lays out lines of state responsibility and demonstrates where states have to provide accountability for their actions. In the Navy's view, to ask UNCLOS to change to detail emerging threats as and when they happen would be an almost impossible task.

The Royal Navy will always act as directed. We are a state organ. We will do as the Ministry of Defence tells us to do in dealing with threats. I hope that that assists in answering the question.

The Chair: Thank you very much. Colleagues will go more into the issue of technology, in particular, as well as emerging threats.

Q39 **Lord Stirrup:** Good morning, Commander. Can we take on the subject of technology? The Royal Navy, like the other services, has a great interest in leveraging modern technology, but so, of course, do potential opponents. The question therefore arises whether UNCLOS is adaptable enough to take account of new and emerging technologies. For example, we heard in earlier evidence that it rather assumed that, when vessels were hailing one another at sea, they would use flags or megaphones. Clearly, things have moved on a little since then.

In your answer to the first question, you suggested that UNCLOS was not flexible enough to respond to rapid changes in the world. Perhaps that applies to technology as well as to threats. Is that the case? How can either UNCLOS or the various pieces of regulation and law for which it provides a framework be adapted so that the Royal Navy, in particular, can make use of emerging technologies and the opportunities that they provide, but counter their use by potential opponents?

Commander Caroline Tuckett: I will take your first question about the flexibility of UNCLOS. UNCLOS lays out the principles of state responsibility enshrined in the law of the sea, so it does not need to be flexible, in my view. It provides a framework that is there.

On dealing with new technology and applying that to the framework of the law of the sea, it is not the first time, particularly from a military perspective, that new technology has developed and we have had to make sure that it is in accordance with international law. For example, if the Ministry of Defence creates a new weapons system, that weapons system can be operated only in accordance with the principles of international humanitarian law. It is therefore put through a full weapons review, in accordance with the additional protocols of the Geneva conventions.

To turn to my area of specialisation, which I think we are here to discuss today, it is absolutely right to say that there are no references in UNCLOS to how we might regulate uncrewed vessels with autonomous capability at sea. That is entirely understandable, as when the treaty was drafted it was not in the contemplation of the convention. What we do have, in my view, is the Vienna Convention on the Law of Treaties. Under Article 31(1), that calls on states to interpret all treaties "in good faith in accordance with the ordinary meaning" of the words and taking into account the contents and the "object and purpose" of that treaty.

To take UNCLOS as an example, we have developed a lot of uncrewed capability, but we do not necessarily have the specifics on how to regulate them. But the principle of UNCLOS, and one of its key aims, is to provide for freedom of navigation and to demonstrate accountability for vessels operating under the principle of the freedom of navigation. Those principles do not change because the technology has changed. We just have to make sure that we apply those principles to our new technology.

The Royal Navy has developed some uncrewed vessels. If it helps, I have pictures here for the committee. This is the first year we have registered 23 vessels with a form of autonomous capability on our defence shipping register. That has a two-pronged effect. First, it means that they are registered as government vessels on non-commercial service, so they are entitled to use passage rights and they have sovereign immunity. Secondly, and perhaps more importantly, any other states out there and any other mariners on the sea know that these assets are United Kingdom assets and that there is a line of accountability back to the Royal Navy as to how they are operated.

I have some slightly more tactical examples of how we can apply the current conventions to uncrewed vessels, if that would help.

Lord Stirrup: We will come on to the subject of maritime autonomous vehicles specifically a little later.

Can I press you a little further on the difference between the overarching convention, which you say does not really need to be adaptable, and the instruments below it, which can do that? You have given a very good example of how the UK and the Royal Navy have registered its new capabilities, using the theory of the framework and the instruments below it. That is good, but we would expect that, because the UK is a responsible nation and the Royal Navy is a responsible military force, but

there are lots of other people out there for whom such attributes might be more questionable. Are we therefore relying on other nations to interpret UNCLOS in the way you described through the—I am sorry; I cannot remember the exact wording you used. It was the definition of how you should define a treaty.

Commander Caroline Tuckett: The Vienna Convention.

Lord Stirrup: Are we now relying on their good will and probity for all of this to work? Are there some mechanisms that can actually be used, if not to enforce those strictures then at least to bring pressure to bear on nations that are perhaps not as responsible as ours?

Commander Caroline Tuckett: At international level, there are no mechanisms at the moment. The IMO has done a scoping review. It did a regulatory scoping exercise in which it looked at the other conventions: collision regulations, SOLAS and the search and rescue convention. From that scoping review, it highlighted gaps in international law where more guidance will be needed in order, as you say, to regulate the activity of uncrewed vessels in particular, and autonomous capability.

The IMO proposal is to put together a code that will effectively plug the gaps in the current treaty so that there is specific guidance. For example, one of the definitions that everybody is debating at the moment is the definition of a master if you do not have a crew on board the ship. The slight difficulty that we have at international level is that the IMO is not expecting to release that code until 2028, and the technology is moving faster than international law.

In the meantime, the Department for Transport has put out a consultation on the Future of Transport Bill, which is looking to address that kind of capability at sea, among other things. We have quite a close working relationship with the Maritime and Coastguard Agency. It runs the UK ship register, so it works very closely with our Defence Shipping Register. I and a number of my colleagues have been asked to contribute to the consultation to look at how legislation might be drafted in order that we might regulate this activity.

As regards enforcing it at sea right now if we came across nefarious activity with an uncrewed vessel, luckily we have yet to encounter it. My view is that we have two challenges. The first is the legal challenge of accountability. If you see an uncrewed vessel on the sea, you do not necessarily know who owns it. It might be registered to a flag state registry in one country but remotely operated from another. Jurisdiction is a challenge.

From a purely practical perspective, from a Royal Navy tactical perspective from the ship that is trying to do the interdiction, the challenge is working out the intent of the uncrewed vessel and what it is planning to do. Our current processes rely very much on hailing the master and hoping that someone on the bridge will pick up the radio. I do not have clear answers on that yet because the technology is still

developing, but we are looking at it very closely and it is something that we will have to develop as time goes on.

Lord Stirrup: Can I ask for clarification on one point? You talked about being involved in helping to draft some legislation. What form would that legislation take, precisely?

Commander Caroline Tuckett: The consultation is on the primary legislation that they intend to push through under the future of transport Bill. It is not me drafting the legislation. I apologise. Those were my poor words.

Lord Stirrup: You are talking about UK legislation.

Commander Caroline Tuckett: Yes.

Q40 **Baroness Blackstone:** In your answers so far, you have referred quite a lot to current international law. Can you tell the committee about how well it regulates unmanned maritime systems and the operations that derive from them? Could you look at that with respect not just to the naval aspects, but to the civilian use of unmanned maritime systems?

Commander Caroline Tuckett: Regulation is a problem because there is a gap in the law. That is why the consultation on the Future of Transport Bill has been pushed out.

I will deal with the Royal Navy perspective first. From the Royal Navy's perspective, we do not want to stop developing the technology. My job as a legal adviser to the command is to advise it on how to conduct operations within the bounds of international law and, where international and domestic law is not clear, to explain the risk.

Where there are gaps in the law, we have adopted a policy of the principle of equivalence. I will give you a practical example. Rule 5 of the International Regulations to Prevent Collisions at Sea says that a vessel on the high seas must keep a good lookout "at all times", using "sight and hearing" and "by all available means" in the circumstances. The immediate problem there is how on earth you apply that to an uncrewed vessel, because you have no one on board with eyes and ears. The way we have approached it in the Royal Navy, when we are certifying our vessels, is to demand that the software used to drive the vessels has to operate on the principle of equivalence. It has to demonstrate that the software has an ability that is as good as having a human watchkeeper on the bridge. That is purely a practical policy solution, but in the absence of definitive regulation we feel that it is the safest way to proceed.

In the civilian world, they are looking at very similar measures. I do not want to speak on behalf of the Maritime and Coastguard Agency, but I know that it is working very hard and is looking at developing codes of conduct that will help to regulate using uncrewed vessels in a civilian sense within the United Kingdom.

Baroness Blackstone: How do you in the Royal Navy work with what you call the civilian world? Presumably they cannot be kept in two completely separate boxes. There must be a certain amount of contact and discussion about how you co-operate and collaborate.

Commander Caroline Tuckett: Yes. In this particular area, there is a huge amount. There is a long-standing memorandum of understanding in place between the Maritime and Coastguard Agency, as the owners of the UK ship register, and the Defence Maritime Regulator, as the owner of the Defence Shipping Register. Representatives of the Defence Maritime Regulator go to quarterly meetings with the Maritime and Coastguard Agency specifically to look at this topic, to make sure that as we develop our policy, with a view to legislation eventually coming into force, we are aligned on how we operate.

There is a slight nuance because, as defence vessels, we are exempt from the provisions of the Merchant Shipping Act 1995. However, our Secretary of State has issued a policy that says that, wherever practicable, our approach to health and safety and any regulations that govern that kind of operation are to be at least as good as the statutory basis. We work together very closely.

Baroness Blackstone: Thank you.

Q41 **Baroness Sugg:** Good morning. Thanks for joining us. You talked a bit about the development of uncrewed capability and mentioned the 23 vessels that have been registered. I look forward to seeing the photos. Can you say a bit more about the current and potential applications of unmanned technology for the Navy?

Commander Caroline Tuckett: It might help if I gave you the pictures now. I could then talk through the pictures.

The Chair: That sounds like a good idea. Thomas, if you could help to distribute the pictures, that would be very useful. We will break for half a minute for them to be circulated before we proceed.

Lord Campbell of Pittenweem: They are not classified, I take it.

Commander Caroline Tuckett: No. All pictures were lifted from either the BBC News website or the Royal Navy website.

Can I draw your attention to the first picture, which is on the top left? You can see what look like two items on the water. The grey one is called MADFOX, which stands for maritime autonomous demonstrator for operational experimentation. I am not responsible for the name. The one below is called the Otter Pro.

The picture neatly encapsulates the big challenge at the moment with uncrewed vessels: namely, are they vessels or are they pieces of equipment, and how do you register them? The MADFOX is being used in experimentation at the moment. We have tested a camera facility on her for possible reconnaissance. She also recently tested a missile launching

system, with a view to developing that capability later on. She is used purely for experimentation, but she can be driven in what we call degree 3 autonomy.

The IMO has produced four levels of autonomy, which we use as guidance. There is a big difference between a vessel that is fully autonomous and a vessel that is remote controlled. She is registered on our defence shipping register as a government vessel on non-commercial service.

The one below that—the little one that is orange and looks a bit like a little remote-controlled car on water—is a survey capability. It can go in and survey inland ports, harbours and waterways in particular much more quickly than sending in a team of Royal Navy personnel. As I am sure you can appreciate, in a conflict scenario we would much rather send that in than send our people in. At the moment, it is also registered as a government vessel on non-commercial service, even though it looks nothing like a ship or a vessel. That is because it is capable of being used in navigation, so we have taken the view that the safer option is to register it as such, as the more cautious approach.

In international law, there is no single definition of “ship”. I counted 13, and I am afraid I stopped there. There is no definition of “vessel”, either. There is a recognition that “ship” and “vessel” mean the same thing, but that is as far as it goes. One of the big debates surrounding these systems is: do we call them vessels or not?

The picture at the top right is of a crewed warship—HMS ARGYLL, a Type 23 frigate. Next to her is what is called the autonomous Pac 24. The Pac 24 is our sea boat. If we were to send a boarding team out from a warship, it would go in one of those boats. This one has the capability to be operated remotely and was recently tested by HMS ARGYLL, where she was controlled from its operations room. The precise aim of using this capability has not yet been defined. The options are things like an extra layer of force protection. You could send this out, again without putting people in the boat.

The bottom two relate to our mine countermeasures capability. The picture on the left, with the three white boats, is a demonstration of the concept. These three little vessels are capable of going out, searching for mines and classifying marine ordnance on the sea floor. They have within their capability a number of smaller underwater vehicles that can go down to look at the mines.

The picture on the right is of Royal Navy Motor Boats “Hebe” and “Harrier”. That is what they look like in real life. “Hebe”, “Harrier” and their sister ship “Hazard” are currently still in the experimental phase, but the intention is to put them into service in the short to medium term to do mine countermeasures. The principle is the same: we would rather send these out than put our people in danger. That is an example of what we have.

Baroness Sugg: The photos are really helpful. We can actually see what we are talking about. I have two brief questions. The first is a point of clarity. Are uncrewed and autonomous interchangeable?

Commander Caroline Tuckett: It depends on the country, the organisation and the convention. The International Maritime Organization, conscious that there is a gap in international law, has published four degrees of autonomy. They go from 1 to 4. Degree 1 is a ship that has some automated systems but still has people on board. I would describe HMS ARGYLL in that bracket. Degree 2 is a capability that can be operated remotely but still has seafarers on board. That could be for safety reasons, for maintenance or for any other reason. Degree 3 is where you operate a vessel remotely but there is nobody on board. That is where we have got to with the MADFOX, for example. Degree 4 is fully autonomous, which means that a ship is capable of making its own decisions.

Just to add to the complication, most of these vessels can go between the different degrees. For example, you could put MADFOX into degree 3 and drive her away from the jetty remotely controlled. If she has specific tasking—if you want the vessel to patrol in an area—that might mean putting her into degree 4, so that she is fully autonomous and can search the sea area without any interaction from us.

Baroness Sugg: Finally, on the potential, are there any big areas the Navy is working on? Where do you see the potential for autonomous or uncrewed vessels going forward?

Commander Caroline Tuckett: The potential is huge. I would not want to label specific areas. In the case of the mine countermeasures, searching for and exploding mines is a really dangerous occupation, so this is an opportunity to develop technology that is safer and reduces risk to life. For the other capabilities, the sky is literally the limit as to what we can do with them. That is why at the moment all our vessels are, effectively, registered as government vessels, but in the acquisition and experimentation section of the register. That is done very deliberately, because we are experimenting, exploring and seeing how far we can take that technology.

Baroness Sugg: Thank you.

Q42 **Baroness Rawlings:** Good morning, Commander. What are the main legal and practical challenges posed to marine security by maritime autonomous vehicles? Is the Royal Navy equipped to address those challenges? Does UNCLOS help or hinder that? Apart from the fact that one is underwater and one is in the sky, how would you compare these unmanned vehicles to drones in the sky as regards legislation?

Commander Caroline Tuckett: As regards the challenges, I go back to the fact that, legally, it is about accountability. If we conduct an interdiction on a vessel that is flagged to another country and that vessel is crewed, we have a line of communication with that vessel and a way of

contacting the flag registry. That may not always be so clear with an uncrewed vessel. At state level, it is about enforcing responsibility for the action of those vessels. There will be actors out there who will try to bypass that system and will not register their vessels.

As I said earlier, we are still developing the practical side. It will be really difficult to try to stop an uncrewed vessel in the water if we cannot communicate with it. From a really detailed practical perspective, my concern is that if you put a boarding team on board an uncrewed vessel, what is to stop it sailing off again? I do not want the boarding team suddenly disappearing off and being taken hostage.

Lord Campbell of Pittenweem: Or blowing up.

Commander Caroline Tuckett: Those are all practical things we have to look at, but we are looking at them. The technology is still so new that it is not something we need to deal with right now, but we will have to deal with it in the short term.

You asked about drones. It is an excellent question that I get asked quite a lot. In some respects, I am envious of the aviation world because it has a very different treaty to work under—the Chicago Convention on aviation. For example, it does not have things like the responsibilities of a flag registry that are laid out in UNCLOS. I do not think that means that UNCLOS is hindering us. UNCLOS is providing an answer, because it provides a mechanism by which you can make people accountable. It goes back to my comment earlier about convincing other states to be accountable and to follow UNCLOS.

Q43 **Baroness Rawlings:** Following on from that, I read in the paper about China's stance on sovereign immune property. How does that relate to this? Is there nothing one can do?

Commander Caroline Tuckett: The UK position is that, first, we consider our vessels sovereign immune, by virtue of Articles 95 and 96 of UNCLOS. We take the view that our equipment is also sovereign immune, because it is state owned and operated. We have some pieces of equipment that are not registered as vessels, but if we lost them we would still say, "Please don't touch. They belong to the United Kingdom."

I am aware that there are instances in the South China Sea, in particular, when that principle is not necessarily being respected. That is a diplomatic issue. We would pass that up to the Ministry of Defence to take a view, rather than trying to deal with it on the ground.

Baroness Rawlings: Thank you.

Q44 **Lord Anderson of Swansea:** Clearly, the technology is moving fast, faster than the textbooks, and the Government are trying to catch up by relying on the Vienna convention and broad legal principles. The IMO, you say, is moving snail-like to a target date of 2028.

Commander Caroline Tuckett: Yes.

Lord Anderson of Swansea: Would it be right to call what we have published a Green Paper or a consultation paper? Would you anticipate legislation being ready before that? Would it apply to both civil and naval vessels?

Commander Caroline Tuckett: My understanding is that the aspiration is certainly for the legislation to be ready before that, but the Maritime and Coastguard Agency has the lead on it rather than the Ministry of Defence. My expectation is that Royal Navy vessels and our government vessels will be exempt from that in the way we are exempt from the Merchant Shipping Act at the moment. However, that would not prevent us trying to follow those provisions wherever we could. If nothing else, even though the legislation will be with regard to civilian shipping, it will provide a very helpful statement of intent from the Government as to how they wish to regulate uncrewed capabilities, which in turn will assist us in the Royal Navy.

Lord Anderson of Swansea: Do you find that our interpretation is shared by other countries? Otherwise it is much less valuable. Is the IMO the appropriate forum in which to discuss with other countries? Do you find that there is an evolving consensus on this? Do other countries share our view? Would it make more sense to agree principles and practice first with like-minded countries, perhaps in NATO, before seeking to widen it?

Commander Caroline Tuckett: In other navies that I have dealt with, as opposed to other Governments, broadly they agree, but most navies are not developing this technology as fast as we are. I would say the US Navy is leading the way, but we are developing faster than most of the allies that I operate with. There is agreement on the basis that we need to interpret the provisions of UNCLOS in a practical way that upholds the spirit of the treaty, but I have not met a naval lawyer in another navy who is grappling with it in the same way I am, other than from the US Navy.

Lord Anderson of Swansea: Only the US? Not France, Germany or neighbouring countries?

Commander Caroline Tuckett: I have spoken to France about it. Their capability is developing, but my understanding is that they have not got as far as we have. I would not want to speak on behalf of the French Navy in case I have got that wrong. You asked whether the IMO is the most appropriate forum in which to have this conversation.

Lord Anderson of Swansea: Yes.

Commander Caroline Tuckett: Absolutely, because it has treaties such as the COLREGs, the Safety of Life at Sea, and Search and Rescue Conventions, under its purview. You mentioned NATO. NATO is also looking at this. The UK is a member of something called MUSI—the maritime unmanned systems initiative—which is effectively an organisation that allows navies in NATO to come together and to talk about this capability. MADFOX recently participated in an exercise off the

coast of Portugal where the MUSI organisation was involved in putting the exercise together to see if we can operate our uncrewed vessels with other navies. The terminology is still developing, but it is very high on the priority list.

Lord Anderson of Swansea: Thank you.

Q45 **Lord Teverson:** Commander, thanks very much indeed for your very clear answers, and from a lawyer as well. It is fantastic and very impressive.

Lord Campbell of Pittenweem: Shame. Shame.

Lord Teverson: We see there is controversy. I was going to ask some questions that Lord Anderson has just asked. The one that I would quite like to ask goes back to one of the original points you made about debates that you have in the Royal Navy about UNCLOS.

It goes back to constabulary operations. Take the Caribbean, where there are huge drugs issues and, because of the value, even submarines that are operated by criminal organisations. I am trying to understand what you are allowed to do on the high seas as part of the constabulary operation there when you come across such illegal activities. Are you allowed to board? Does it depend on the flag, or are they often unflagged anyway? I am interested in that problem on the high seas and how a commander, officer or master, or whatever you call them, interprets it?

Commander Caroline Tuckett: I am afraid I will now give a really lawyerly answer, which is that it vastly depends on the circumstances of the case. However, we have options. If we take your drug interdiction option, Article 110 of UNCLOS provides a list of specific circumstances in which a warship may board another vessel on the high seas. Article 110(d) says that we may board a vessel where we have a reasonable suspicion that it does not have nationality; in other words, it is not registered to a flag registry. For drug interdictions out in the Indian Ocean and the Gulf, for example, initially a vessel is boarded because it is suspected to be without nationality. It is declared stateless, and once it is declared stateless we impose UK jurisdiction on that vessel, at which point we are allowed to search for and seize the narcotics.

Another option is that we can get on board a vessel with flag state consent. If there was a vessel on the high seas that we thought was doing something nefarious but it was flagged to another state, we would seek the other state's permission. We also do operations under United Nations Security Council resolutions, and that will often provide a legal basis on which we can board. Those are the three main options that we would use.

Lord Teverson: Does a country, the flag state, ever give permission for that?

Commander Caroline Tuckett: It has not been exercised often.

Lord Teverson: Thank you.

Q46 **Lord Campbell of Pittenweem:** Thank you very much, Commander. For the purpose of our evidence session today, we were issued with a paper entitled *Maritime Autonomous Vehicles: New Frontiers in the Law of the Sea*. Is that paper something you are familiar with?

Commander Caroline Tuckett: A long time ago.

Lord Campbell of Pittenweem: A section of it leapt out to my lawyerly mind. Perhaps I can read it fairly quickly: "How any MAV is regulated will depend in the first instance on whether it is a vehicle that falls within a particular legal regime or not". Then it says, "autonomy levels can be divided into four categories—'M: Manual navigation with automated processes and decision support', 'R: Remote-controlled vessel with crew on board', 'RU: Remote-controlled vessel without crew on board', and 'A: Autonomous vessel'". Finally, it says, "From a legal perspective, the level of human involvement has implications for characterising the vessel".

If that analysis is correct, how do you ever find an agreement, a code, draft legislation or even a bilateral agreement? Does that not point out the very considerable difficulty that autonomous vessels now provide?

Commander Caroline Tuckett: Yes. It points out the difficulties, but I would not say there is no solution. The proposal of those categories is very logical and makes sense. We have chosen to use the IMO's categories, because it is the IMO and it is an influential organisation, and it seemed more appropriate to go with the IMO. It goes back to the point we discussed earlier: do you wish, for example, to call the Otter Pro, the little orange thing, a vehicle, a system, a ship or a vessel?

Lord Campbell of Pittenweem: A vessel.

Commander Caroline Tuckett: That is what that paragraph very neatly highlights. There are challenges, but that is why, from the Royal Navy perspective, we have gone back to basic principles and followed the provisions of UNCLOS. In UNCLOS, if you have a piece of equipment that is designated a vessel, it is allowed passage rights to conduct innocent passage, and transit passage in straits, and if it is a government vessel warship it is sovereign-immune. These are two key factors that we have had to take into account when we have looked at classifying our equipment.

Lord Campbell of Pittenweem: You would not want, in any circumstances, to detract from those definitions, given that they ascribe a very substantial amount of discretion. The Royal Navy would not want in any circumstances to give away the discretion that they afford.

Commander Caroline Tuckett: No.

Lord Campbell of Pittenweem: Thank you.

Q47 **Lord Stirrup:** Can we broaden the discussion that we have been having

on autonomous systems to UNCLOS more widely? Are you able to share with the committee any of your personal experiences and challenges in dealing with Royal Navy operations in the context of UNCLOS? I imagine, for example, that the carrier deployment to the Far East must have raised some significant questions in advance and some significant questions on the hoof. Can you share anything with the committee to give us a sense of how all this works in practice for the Royal Navy?

Commander Caroline Tuckett: Yes, I will give two examples: a carrier example, because you raised it, and a personal example from an interdiction under Article 110. With regard to the carrier, when ships go through an international strait and transit passage under Article 38, UNCLOS says that they are allowed to travel in the normal mode. The UK position is that if you are a submarine, normal mode means that you can go submerged.

For the carrier, one of the questions that came up was about force protection and whether we could have aviation flying when the carrier was going through international straits. It is a very well-established UK position that if aviation is flying for force protection, that counts as the normal mode in an international strait. I raise it, because we are relearning how to be a carrier navy. We had to step through that process again, double-check that we were content and that we would be allowed to fly aviation, and force protection for a transit passage. That was a pre-planned—

Lord Stirrup: Does Russia agree with that interpretation?

Commander Caroline Tuckett: My understanding is yes. Russia agrees with a lot of things that we do.

From the personal perspective, you asked earlier about interdictions in Article 110. About three years ago, I was deployed to Bahrain as the legal adviser to the United Kingdom Maritime Component Commander, and to the Combined Maritime Forces, which at the time was a coalition of 32 nations headed up by an American three-star admiral. For a period of about four months, I was providing legal advice on boardings under Article 110 of UNCLOS. For vessels that were suspected of being without nationality, we would see if we could apply jurisdiction to interdict for drugs. I was advising a French warship and an Australian warship. They were reporting to a Saudi Arabian command team who was reporting up to a United Kingdom commodore, who was then reporting up to an American vice-admiral, and I was their legal adviser.

That was all possible because we all follow UNCLOS and the principles of Article 110—that warships have the right to do that on the high seas. It took a lot of talking. Between different states, there are different interpretations as to what might be a reasonable suspicion of statelessness. Ultimately, that operation continued for several months, and boardings were happening every day, if not twice a day, because we all worked under the same construct of UNCLOS.

The Chair: Thank you.

Q48 **Baroness Fall:** I have two questions, if I may. I want to come back to the accountability point that Lady Rawlings raised in relation to drones. Drones can be very controversial. Are you absolutely sure that when these ships, or whatever you call them, unmanned vehicles, go unmanned, they are, first, still accountable to you and, secondly, not liable to be taken over by a foreign source? I do not mean to sound like James Bond.

On the wider legality of UNCLOS, one of the things this committee has been looking at carefully is the way in which the challenges are changing with climate change—both territorial boundaries, and what could be the wild west in looking for new resources at sea. Is that something you spend a lot of time on, and, if so, on what points?

Commander Caroline Tuckett: On the accountability point, when you ask whether I am sure that they will not do anything untoward, are you talking about our vessels?

Baroness Fall: Yes.

Commander Caroline Tuckett: I can reassure you that the software that is used to test those vessels goes through rigorous testing.

Baroness Fall: Right.

Commander Caroline Tuckett: It takes a long time to get a vessel certified to the point where we will even let it go into remote-control mode, let alone off on its own. For that reason, the MADFOX—the one on the left—has operated in degree 3, which is remote controlled with people ashore, but it has taken over 12 months, if not 15 months, to get to that stage.

Cybersecurity is a worry for all of us. On the civilian side, the Maritime Autonomous Systems Regulatory Working Group, which was set up under the umbrella of the Department for Transport, issued a code of practice to the civilian shipping world, and it has recently incorporated in that an entire section on cybersecurity. It is a very good read. It is very simple and very practical. It highlights how seriously industry, as much as the Royal Navy, takes this risk. I have to acknowledge that it is a concern, but we are doing what we can to try to combat it.

You asked about climate change and resources issues. UNCLOS, as a treaty, is a Foreign Office lead, as opposed to an MoD-Royal Navy lead. We work very closely with the Foreign Office. I understand that its senior legal adviser is speaking after me. He is much better qualified than I am to discuss that. The Royal Navy is often consulted. One reason why we work very closely with the Foreign Office is because there are certain exemptions in UNCLOS for warships and sovereign immune vessels. When it is looking at the terms of UNCLOS in the light of something like climate change, we are often consulted.

Baroness Fall: Thank you.

Q49 **Baroness Sugg:** Further to the previous question, you talked about working with allies, but we have not really touched on the more hostile actors. Is there anything you can share in public on the perceived threat or particular areas of concern with autonomous vehicles? I understand if you cannot. Secondly, is UNCLOS, or the regulations under it, any help in that area, or is there further work that you would like to see developed in order to tackle that threat?

Commander Caroline Tuckett: First, I would not want to share capabilities, if that is okay. As to whether UNCLOS is fit for that, UNCLOS is there to help, and the provisions are in place, but, as you will probably understand better than I do, in order to ask another state to obey UNCLOS, nine times out of 10 it becomes a diplomatic issue, as opposed to a military or legal issue. The law is there. This is where I, as a legal adviser, would turn to the policy adviser and say, "This is for you to fix".

Q50 **The Chair:** Thank you. We are almost at the end, but I have one more question. It is about human rights. Earlier, you mentioned that, with regard to the UK and its development of new weapons, there is a process whereby we make sure that the new weapons comply with humanitarian law, not in the way we use them but the weaponry development itself. We have been hearing evidence that has set out that it is very difficult to ensure that there is compliance at sea with international humanitarian law, and the lawyers have been telling us about the gaps that there are.

Today, we have been talking very much about autonomous vehicles. Could I focus on that aspect? In developing autonomous maritime vehicles, is there any effort to ensure that human rights are observed? What are the complexities of that? Is there any way in which existing systems help us and guide us on how to ensure that they comply with human rights, given that you say there is a range of one to four? There is human intervention directly in some cases, but certainly in preparing software there is human intervention for those in the category that is wholly autonomous once launched.

Commander Caroline Tuckett: Apologies, this is my misunderstanding. Are you asking about the application of human rights law or international humanitarian law, which is the law—

The Chair: Human rights law.

Commander Caroline Tuckett: All right. With regard to autonomy and the uncrewed vessels, one of the questions that is being asked in the consultation for the future of transport Bill is whether we choose to acknowledge those that operate as a "crew"—the people ashore—and give them seafarer rights in the way the crew of a crewed ship would have. I do not have the answer to that, I am afraid. It is yet to be determined, but I can assure you that it is being looked at, because there is a human rights subtext to that in how we look after the people who are operating those systems.

The Chair: Thank you, that is very helpful. I should add that particular evidence on human rights that we have been given has related to problems in the Merchant Navy, not the Royal Navy. Clearly, there is a complexity about how one is able to enforce either international humanitarian law or human rights at sea in certain circumstances.

Baroness Rawlings: This might be out of scope, but what percentage are we looking at with the Royal Navy and the amount of capability it has vis-à-vis commercial tankers, of which there seem to be so many? Is the possibility of rogue ones monitored very carefully? Are there many more, or not? I have no idea.

Commander Caroline Tuckett: Are there many more—

Baroness Rawlings: Commercial tankers.

Commander Caroline Tuckett: Yes.

Baroness Rawlings: We are always seeing photographs in the papers of huge numbers of these tankers coming from the Far East and going backwards and forwards and being stopped. How does the Navy relate to that?

Commander Caroline Tuckett: Are you talking about tankers coming into the United Kingdom in particular?

Baroness Rawlings: In general in UNCLOS.

Commander Caroline Tuckett: We may be asked by a department such as the Home Office to assist with a constabulary operation on a tanker that is in United Kingdom waters. In the news a while ago, some stowaways on a tanker called the "Nave Andromeda" threatened to hijack the crew, and the Royal Navy was called in to assist. We did that under military aid to the Home Office.

For tankers out on the high seas, if we were to inspect a tanker or try to board or interdict it, we would go back to needing a legal basis. We would most likely not be able to use UNCLOS Article 110(d), because that is a vessel suspected of being without nationality. Tankers tend to be registered. If we were asked to interdict a tanker for whatever reason, the most likely scenario is that, first, we would have to get the flag state's consent from whichever flag registry runs that tanker. It is not impossible, but it is not common.

Baroness Rawlings: Thank you very much.

The Chair: Thank you very much indeed, Commander. I echo my colleagues in thanking you for being so clear in explanations of an area of law that, clearly, is not only complex but where, as you said, there are gaps that are not necessarily filled by international law. There is a lot more involved as we see the developing technologies, too. Your contribution has been very valuable. Thank you very much indeed.