

THE SEA IN A VARIABLY GLOBALISED WORLD

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Chris Parry, a Royal Navy officer whose last Service job was as Director General of UK MoD's Centre for Development, Concepts and Doctrine, is now Chair of the UK's Marine Management Organisation. In this article, he discusses the need for a comprehensive approach to meet the many challenges posed by both man-made and natural causes, and discusses the future technologies that will have to be developed.

Amid the geo-strategic changes of the past 20 years or so and the distractions of the conflicts in Iraq and Afghanistan, it has been all too easy for politicians and world opinion to take the sea and its riches, in terms of resources and access, for granted. The sea is the 'great highway' of Alfred Thayer Mahan and, as I have written before, the physical manifestation of the world wide web, in that everything that moves virtually on the internet between continents and states actually moves by, under or over the sea. Along with space and cyber-space, it is one of the great 'global commons' – to which states, corporations and individuals, if they have the resources and interest to do so, have unfettered access outside still limited state jurisdictions.

Three Main Features

The near future at sea is likely to be defined by three main features – littoral complexity, sustainable development and oceanic competition – as states seek to exploit and sustain existing natural advantages and compete for resources and influence at sea in a variably globalised world. By 'variably', I mean a world in which states will choose to compete or cooperate depending on the balance of risk and advantage to themselves.

In addition, the symptoms of a wide range of regional and local risks will persist in the maritime environment, especially in contexts where there are uncertain safeguards and weak governance. Some will arise as a result of major transnational pressures, such as climate change, resource insecurity, natural and man-made disasters and uncontrolled migration. Others will include the effects of state-based political assertiveness, economic ambitions and environmental sensitivities, as well as the threats derived from crime (including trafficking, piracy, illegal fishing and the dumping of toxic materials), terrorism (both conventional and catastrophic) and ecological disaster (ecosystem damage and the collapse of fish stocks). Consequently, a fully ordered, predictable international trading order and open system of control, as is currently understood, are unlikely to prevail.

In response to rising population, demographic pressures and urbanisation, societies and states are increasingly encouraging the advance of human economic and social activity into their immediate coastal and littoral areas. In addition to hosting the extraction of oil and gas deposits,

the coastal and offshore zones are being progressively developed and reclaimed for high-volume habitation, industrial production, aquaculture, renewable energy installations, leisure and transportation. Sometimes this is occurring in spite of changing topographies, rising sea levels and extreme events, even with regard to critical national infrastructure, population centres and nuclear installations. Elsewhere, such as in the Netherlands and other threatened areas, pre-emptive action is being taken, with massive civil engineering projects and floating settlements, to adapt to emerging conditions and the prospects of dramatic change.

Implicit at the heart of emerging requirements will be the drive towards sustainable development, which is generally defined as balancing national economic, environmental and social imperatives and ensuring that the sea can continue to provide the benefits enjoyed today for future generations. States have come to accept that it is no longer sustainable to exploit the resources of the sea – fish, minerals or aggregates – to the point of depletion and exhaustion and without consequences. States are therefore imposing restrictions on certain types of activity and developing ways of promoting sustainable development. They are also addressing the growing requirements of international agreements associated with carbon reduction, environmental standards and the preservation of complex ecosystems.

The Need for a Comprehensive Approach

Taken together, this emphasis on offshore development represents a situation of unprecedented complexity and implies the need for improved, streamlined and more exact planning, regulation and licensing of previously largely unregulated offshore activity. In turn, this means increased investment in integrated maritime and coastal surveillance, monitoring and security solutions, as well as the seamless engagement and interaction of a wide range of enforcement agencies. Sustainable development alone will require more detailed arrangements and scientific evidence, as well as regular monitoring and sampling, to support precautionary measures and enforcement.

At one level, the planning and regulation aspects will require novel technologies, systems and platforms, both to monitor and inspect the structural integrity, security demands and safe, sustainable operation of offshore structures and installations, and to balance social and economic imperatives. At another, it will be necessary to fuse military and civil requirements to deliver a comprehensive approach to maritime security, surveillance and control that gives seamless routine coverage, detailed information about individual events and vessels, and graduated responses to periodic incidents. Advanced, high-discrimination ICT, rapid processing techniques and sophisticated decision tools will be required, especially in the areas of vessel traffic assessment and management, and the efficient operation of high-volume ports and energy hubs. With the proliferation of offshore structures, areas for development will

necessarily include sound-based and innovative non-acoustic underwater inspection, positioning and investigation technologies, particularly for operations in complex inshore areas and in penetrating deeper waters.

On the high seas, it is likely that states will extend their jurisdictions and claims into sections of what hitherto has been considered international waters. As a result, disputes over adjacent, historic or emerging claims are increasingly possible. In May 2009, relaxations in the rules established by the UN Convention of the Law of the Sea (UNCLOS) led some countries to extend their claims to economic zones out to 350 nautical miles (from 200). Further extensions – both legitimate and unilateral – are likely to be driven by the desire to reach oil and gas reserves in the deep field, to access sea bed minerals and deposits and exploit fish and other organic resources.

With a rapidly growing global population, the requirement for additional protein will be critical to satisfy demand and much of this protein will need to come from the sea, possibly from deep-sea aquaculture and farming. The high seas also host a proliferating amount of sea bed communications cables and pipelines, which in an interconnected world have strategic significance for prosperity and resilience. Finally, the high seas represent a vital medium for military activity, with regard to strategic and space systems, strategic access and the deployment of deterrent and conventional forces.

In some cases, these claims and conflicting demands for use will be settled by negotiation and arbitration; in others, historical evidence and the example of prevailing antagonisms suggest that they could lead to confrontation and conflict. Already, some states have asserted their right to impose restrictions on the passage of certain types of vessel in waters of interest, while others have sought to introduce control regimes on the pretext of national or regional interest.

Similar disputes are possible as a result of the unilateral application of genuinely inspired or economically motivated environmental restrictions, such as 'green seaways' and 'green' restrictions (with regard to emissions, propulsion and cargoes), that privilege the ships of some states at the expense of others. Further restrictions on the free use of the sea might arise as a result of perceived security needs. Here, innovative plans may be introduced for an international regime at sea based on ship 'passports' and traffic rules and schemes borrowed from the principles of flight planning and air traffic control.

Technologies Needed

The proliferation of activity and competition on the high seas and in the deep oceans will require specific technologies to protect and preserve legitimate interests and provide surveillance of vast tracts of sea and unregulated space, together with the communications and integrated systems to allow timely and appropriate action. This will include wide area

coverage and assurance, integrating all sources of intelligence through satellite (imaging and tracking), manned or unmanned air vehicles and the integration of wider civil and military assets.

At the same time, successful exploitation and control of deep ocean resources will require detailed imaging and mapping of underwater seascapes and the ability to access resources in deep water. Novel applications and infrastructures will be required to exploit sea bed minerals and mining, as well as accessible oil and gas, most of which will rely on more precise sensing, unmanned submersibles and more sophisticated high-volume extraction and freighting methods. All these elements will have to operate within a sustainable development regime and will require advanced infrastructure and support mechanisms to ensure operational resilience and commercial viability.

Alongside traditional platforms, the extension of states' interests and jurisdictions into deeper waters is likely to lead to a renewed emphasis on underwater platforms and systems, currently dominated by traditional methods and, in the face of competition by other states or interlopers, over-reliant on submarines and mining. However, as indicated above, the way in which operations at increased depths are undertaken is likely to require extensive review with regard to the appropriate methods for dealing with the very different challenges of exploiting – and defending – this very demanding environment. Major advances are likely to be required with regard to underwater arrays, communications, specialised vehicles and exploration, together with an appropriate balance of military and civilian capabilities and investment.

The Scramble for the Sea

Over the next ten years, states will increasingly seek to exploit, regulate and control development in their littoral regions as mankind moves offshore. Simultaneously, the next decade will witness a 'scramble' for the sea, competition for oceanic resources and the political and economic colonisation of vast tracts of what have, until recently, been considered international waters. Unfortunately, peace at sea does not keep itself and, within living memory, that peace has largely been kept by those states and institutions that have had an inherent political and economic interest in maintaining order and discipline at sea for their own benefit and that of the international community. With new conditions and pressures emerging at sea, and new geo-political alignments, we will be facing an environment that will hardly relate to what is understood or practised today, and new international conventions and arbitration techniques will be required to prevent conflict and preserve the international system.

Innovation, fresh thinking and novel applications will be needed to deal not only with the consequences of new patterns of cooperation and competition at sea, but also with the increasingly compelling requirement for sustainable development in the maritime environment. ■