



Royal United Services Institute  
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Conference Report

# RUSI First Sea Lord's Sea Power Conference

Sidharth Kaushal



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RUSI Conference Report, July 2019



**Royal United Services Institute**  
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# RUSI First Sea Lord's Sea Power Conference

## Introduction

The 2019 RUSI First Sea Lord's Sea Power Conference held on 15 May 2019 challenged delegates from navies from around the world to reconcile the competing demands of meeting current requirements of naval operations and achieving a longer-term transformation of naval forces to meet future challenges. The conference addressed the broad geopolitical trends that will shape navies' future operating environments and the prospects for a UK maritime strategy to emerge in this milieu before delving into the specific technological trends and personnel requirements that might inform naval planning in this context. The links between the navy's planning and broader policy visions such as Maritime 2050 were also discussed.<sup>1</sup>

Conference participants discussed four central challenges that face strategists and civilian defence planners:

- The first challenge is correctly ascertaining the nature of changes to the character of war. Williamson Murray and MacGregor Knox usefully distinguish between military–technical revolutions and revolutions in military affairs. The former are primarily technology driven and alter the character of war at the tactical and operational levels. By contrast, the latter typically involve the intersection of technological, organisational and social changes and transform war at every level, from the strategic to the tactical.<sup>2</sup> For example, the US Army's development of the AirLand Battle framework to leverage the opportunities provided by precision-guided munitions was a military–technical revolution. By contrast, the reorganisation of the French army in the aftermath of the French Revolution was a revolution in military affairs which radically changed the character of conflict. The French Revolution changed the nature of military organisations by including the general populace in warfare and, concomitantly, expanded the size of armies while ensuring that leaders had to seek expansive war aims to justify this level of mobilisation. The changes seen were not just technical or organisational but socially driven and altered the character of war at all levels. Delegates heard that today, as navies contemplate their futures, senior leaders would do well to divine the precise nature of the transformation being asked of their forces and reach deductions as to whether they face an evolutionary military–technical revolution or a disruptive revolution in military affairs. Historical

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1. Department for Transport, 'Maritime 2050: Navigating the Future', 2019.

2. Williamson Murray and MacGregor Knox, 'Thinking About Revolutions in Warfare', in Williamson Murray and MacGregor Knox (eds), *The Dynamics of Military Revolution 1300–2050* (Cambridge: Cambridge University Press, 2009), pp. 1–15.

research on the drivers and impact of previous revolutions in military affairs, then, will be a critical factor in helping the navy ascertain the nature of its future strategic and operating environment.

- Second, having identified agility as an objective, the next step will be to specify the structural and procedural changes needed to cultivate an agile organisation. A central task will be analysis of Royal Navy capability areas to ensure that existing processes are fit for purpose and, where they are not, to alter the navy's way of doing business. In effect, leaders have to take stock of, and attempt to cultivate, what Michael Horowitz called their organisational 'adoption capacity'.<sup>3</sup> The adoption capacity of an organisation is its ability to integrate changing technology, concepts of operations and personnel. Generally speaking, three variables predict organisational adoption capacity: the organisation's ability to sustain the financial costs of adoption; the organisation's age; and the congruence (or lack thereof) between the organisation's critical task focus and emerging imperatives.<sup>4</sup> Delegates were asked to contemplate whether navies had sufficient adoption capacity to deal with the challenges being faced.
- The third challenge is identifying and accounting for sources of uncertainty with regard to the first-order assumptions that drive planning. Military leaders (like all organisational leaders) are forced to plan under conditions of uncertainty regarding first-order beliefs: the assumptions that allow leaders to rank threats as being more or less urgent and identify pacing challenges. However, changing political circumstances can alter a state's hierarchy of threats and, by extension, what it asks of its military. Consider, for example, the way in which the two-power standard that the Royal Navy outlined at the turn of the 20<sup>th</sup> century with France and Russia in mind became all but obsolete as both countries became de facto allies against a rising Germany.<sup>5</sup> Or, to use a more contemporary example, one might consider the resurgence of traditional security threats which, it was assumed, would be superseded by constabulary duties in an age of 'new wars' conducted not against states but against non-state actors.<sup>6</sup> Documents such as the sixth edition of 'Global Strategic Trends' (GST 6) incorporate an understanding of uncertainty by mapping the contours of several conceivable future geopolitical horizons as opposed to projecting the future per se. Naval planning would benefit from a military operational-level counterpart to the multiple futures framework outlined in GST 6 in order to stress-test the viability of future planning in the face of uncertainty regarding first-order assumptions.<sup>7</sup>

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3. Michael Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Relations* (Princeton, NJ: Princeton University Press, 2010), pp. 2–5.

4. *Ibid.*

5. Christopher Bell, 'The Politics of Seapower: the 'One-Power Standard' and British Maritime Security', in Christopher Bell, *The Royal Navy, Seapower and Strategy Between the Wars* (Stanford, CA: Stanford University Press, 2000), pp. 1–10.

6. For an example of the 'new wars' framework, see Martin Van Creveld, *The Transformation of War* (New York, NY: Simon and Schuster, 1991).

7. Ministry of Defence, 'Global Strategic Trends: The Future Starts Today', 6<sup>th</sup> edition, 2018.

- Finally, and perhaps most crucially, leaders need to distil a broad set of policy imperatives derived from multiple stakeholders into a coherent and parsimonious set of strategic principles. Policy documents like George Kennan's 'X Telegram' and Bismarck's 'Bad Kissingen Memorandum' stand out in the annals of history by virtue of their ability to distil key objectives and waypoints to achieving them from the cacophony of competing aims, debates about the nature of the future strategic operating environment and department-level objectives.<sup>8</sup> The principles articulated in both documents were, moreover, flexible enough to account for unexpected change. The challenge facing both political and military national-level leadership is to articulate a maritime strategy that is more specific than general statements about maintaining world order and yet sufficiently general to amount to more than a description of the needs of the hour. A strategy that can serve as a bridge between policy aims and department-level activity is required.

## The Changing Character of War and Military Adaptation

### Leveraging the Positive Externalities of Technological Change

The burgeoning technological and social changes that figures such as Klaus Schwab characterise as the harbingers of a 'fourth industrial revolution' may well portend a revolution in military affairs as opposed to merely a military revolution.<sup>9</sup> In conference sessions one and four, the audience heard from speakers such as James Sproule of LEK consulting and David D'Souza of CIPD engagement that a combination of population ageing and demographic decline across the developed world and technological disruption in the form of automation could fundamentally alter the nature of work. Automation, in particular, will likely raise the demand for the skills of individuals capable of complex non-routine tasks as opposed to both manual workers and individuals who can perform complex but routine jobs, such as technicians. In the medium to long term, artificial intelligence (AI) may well come to perform tasks typically reserved for human decision-makers – such as tactical planning – with greater efficiency. In session three, conference speakers such as acting Ministry of Defence (MoD) Chief Scientific Advisor Simon Cholerton considered, however, that this will not eliminate humans from the decision-making loop. They proposed that a more likely outcome involves human–AI teams, with AI providing tactical solutions and human decision-makers making broader strategic choices. The future force, then, may well be a smaller force of highly educated 'strategic corporals' selected on the basis of their capacity for higher-order decision-making and their ability to thrive in a technology-rich environment.

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8. On Kennan's 'X Telegram', see John Lewis Gaddis, *Strategies of Containment: A Critical Appraisal of American National Security Policy During the Cold War* (Oxford: Oxford University Press, 2005), pp. 24–30; on 'Bad Kissingen', see Holger H Herwig, 'Imperial Germany: Continental Titan, Global Aspirant' in Andrew Erickson, Lyle Goldstein and Carnes Lord (eds), *China Goes to Sea: Maritime Transformation in Comparative Historical Perspective* (Annapolis, MD: Naval Institute Press, 2012), p. 172.

9. Klaus Schwab, *The Fourth Industrial Revolution* (Geneva: World Economic Forum, 2016).

A cautionary note was sounded by Nick Wright of University College London in the third panel on technology, however. Wright noted that AI systems still struggle to fully understand context and require substantial amounts of data in order to 'learn'. In the short to medium term, then, automation is more likely to replace individuals involved in routine cognitive and non-cognitive tasks, such as the maintenance of vessels or assessing ISR, as opposed to higher-order tasks. Nonetheless, as the audience heard from speakers such as Cholerton and former US Presidential Adviser and founder of H-Robotics Philippa Malmgren, developments in the realms of data-processing, networking and the Internet of Things are already reaching a level of maturity that is likely to produce an impact on the character of warfare, if not a military revolution.

In the short to medium term, then, navies will confront something closer to a military technical revolution than a revolution in military affairs. A combination of early developments in artificial intelligence, additive manufacturing and the increasing lethality of small unmanned platforms looks to exacerbate the problems faced by forces reliant on few and exquisite platforms by tipping the military balance at sea in favour of mass. For example, scholars such as T X Hammes note that a combination of relatively primitive AI, additive manufacturing and nano-explosives are collectively likely to increase the number and lethality of UAVs operating as loitering munitions in the congested urban littorals where, as First Sea Lord Admiral Philip Jones noted in his speech, naval and amphibious forces will be needed most.<sup>10</sup>

Similarly, in line with speakers such as Wright's observation that ISR roles will be the primary impact area for automation and AI in the short term, unmanned gliders currently used for civilian research could well serve as cheap redundant sources of surveillance data or as loitering smart mines – a development that some argue will complicate the deployment of previously stealthy platforms such as attack submarines.<sup>11</sup> The application of emergent technology in the area of neural networks can allow AI that has been sufficiently well 'trained' to assess imperfect ISR for targeting purposes more effectively than human analysts – potentially allowing the adroit deployment of precision strike tools against both fixed and mobile assets and exacerbating the challenge posed by ground-based anti-access/area denial (A2AD) systems. Critically, however, all of these changes largely involve the intensification of existing tactical and operational trends, such as the need to grapple with the congested and complex nature of the littoral or the risk posed by networked reconnaissance strike complexes. Moreover, the technology that enables these shifts is characterised by rapid technological diffusion, returns to scale and diminishing requirements for financial investment. These trends have allowed relative ease of adoption even for unsophisticated actors, suggesting that barriers for entry and adaptation will be even lower for powerful states.<sup>12</sup> That said, the question of how a navy built around a few expensive

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10. T X Hammes, 'Expeditionary Operations in the Fourth Industrial Revolution', *MCU Journal* (Vol. 8, No. 1, 2017), pp. 83–107.

11. Bryan Clark, 'The Emerging Era in Undersea Warfare', Center for Strategic and Budgetary Assessments (CSBA), 2015, p. 7.

12. T X Hammes, 'Technological Change and the Fourth Industrial Revolution', in George P Schulz, Jim Hoagland and James Timbie (eds), *Beyond Disruption: Technology's Challenge to Governance* (Stanford, CA: Hoover Institution Press, 2018), pp. 37–66.

platforms should adapt to an age of mass is worth exploring. For example, using expensive platforms such as SSNs as 'motherships' for cheaper underwater unmanned vehicles (UUVs) and extending the range at which carriers can operate by leveraging cheaper and longer-range unmanned combat air vehicles (UCAVs) in the place of more expensive shorter-range manned aircraft have been suggested as tactical expedients to meet this challenge.<sup>13</sup> Nonetheless, it would appear that the immediate impact of technological change is likely to ease certain pressures on the navy – such as the need for manpower – while stimulating changes within the force that are more evolutionary and technical than revolutionary.

In the medium to long term, however, this evolutionary change will likely lead to something more disruptive as the pace of technological change quickens and, more importantly, interacts with social trends such as changes in the expectations of human workers and economic trends favouring small enterprises. As AI matures and begins to perform tasks that might be classified as cognitive non-routine, a broader shift in all aspects of military conduct, from the generation of forces to their strategic employment, is likely to occur.

Substantial changes to military practice will be necessary both to leverage the more complex technological innovations that will emerge in the medium to long term and to secure the personnel capable of exploiting them. With regard to staying abreast of technological change, the critical issue will be building cross-cutting links between the navy and industrial partners. This civil–military integration will need to extend beyond the few companies with which the navy has traditionally worked if it is to give the forces access to the cutting-edge innovation that often occurs in smaller firms. The audience heard from speakers such as Malmgren that keeping abreast of disruptive innovation will likely require a broad shift in the way in which the MoD approaches procurement and research and design – with a greater emphasis on cultivating ties with smaller firms and on eschewing a risk-averse investment culture in favour of a 'fail fast' approach. This raises questions regarding how the navy approaches its ends–means chain with regard to procurement. On the one hand, excessive neophilia may result in the procurement of technology that is either immature or surplus to operational requirements largely because other nations have adopted it. On the other hand, a fail fast approach requires the navy to spread its bets on a substantial number of potentially disruptive technologies – a process that is wasteful because most bets fail, but also increases an organisation's chances of being the first to uncover the military potential of a given technological innovation.

Existing research suggests that there are advantages and drawbacks to both the approach that allows operational concepts and requirements to drive procurement and the approach that focuses on procuring and experimenting with the broadest possible array of new technology and building tactical and operational plans around experimentally derived results. On the one hand, militaries that have a top-down approach in which concepts of operations drive procurement are often able to signal their requirements to industrial partners effectively

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13. Clark, 'The Emerging Era in Undersea Warfare', p. 35; Bryan Clark et al., 'Regaining the High Ground at Sea: Transforming the U.S. Navy's Carrier Air Wing for Great Power Competition, CSBA, 2018, pp. 1–10.



and thus avoid the budgetary waste of failed experiments because the gap between military and industrial assumptions is reduced. On the other hand, militaries that take a bottom-up approach often adapt more quickly to technological change.<sup>14</sup> A critical question for the navy, as it contemplates a fail fast approach, is how much wasted investment it is willing to tolerate to secure a breakthrough that pays for the model.

A second point raised by speakers such as Wright and Malmgren was that the critical resources that navies have to cultivate to be effective will change. For example, a major advantage of authoritarian states in the global AI race is their ability to train AI using large volumes of data forcibly extracted from their citizens. Given that the efficacy of any system depends on the amount of data it is provided with, cultivating stocks of data may be as important as cultivating strategic reserves of tangible assets – a point highlighted by Wright.

### **Matching the Right Personnel to the Right Jobs**

Building stocks of human capital will also require the modernisation of the navy's manpower model. As speakers such as British Maritime Transport's Sarah Kenny highlighted, the navy will have to confront a changing work culture which emphasises flexibility if it hopes to attract individuals who are comfortable with the technology-rich environment in which future recruits will have to operate. In particular, the growing importance of areas such as cyber security will likely require efforts to reach out to a recruiting pool that is young, highly educated and desires greater flexibility in the work it does. Moreover, as the difficulties surrounding the Pentagon's collaboration with Google illustrate, segments of this workforce may also be averse to working with the military.<sup>15</sup> As such, the navy will need to reconsider both its outreach and its internal processes for managing personnel to reach out to a demographic with a variegated skill set that is quite different from traditional recruits.

Two models for mitigating the challenges posed by a changing workforce were proposed. One model, outlined by Marianne Greene of Deloitte, is a 'patchwork' system which combines part-time workers, crowdsourcing, contractors and full-time workers – thereby leveraging the niche talents of individuals who may not be inclined to work for an organisation on a full-time basis. The alternative pathway, highlighted by speakers such as CDP People Transformation Lead Adrian Dottridge, was to focus on developing a strong internal pipeline to ensure the cultivation and education of promising individuals. Greater flexibility in terms of allowing individuals to choose their career paths and allowing lateral entry will go some way to this end. This latter course of action is particularly appealing given that the navy has historically acted as a vehicle for social mobility – offering skills and training to potentially talented but under-skilled recruits. Given that maintaining public support for naval expenditure requires embedding the navy in the UK's social consciousness, maintaining this role as an engine of mobility may be particularly

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14. Dima Adamsky, *The Culture of Military Innovation* (Stanford, CA: Stanford University Press, 2010).

15. Frank Hoffman, 'The Hypocrisy of the Techno-Moralists in the Coming Age of Autonomy', *War on the Rocks*, 6 March 2019, <<https://warontherocks.com/2019/03/the-hypocrisy-of-the-techno-moralists-in-the-coming-age-of-autonomy/>>, accessed 5 June 2019.

important. This does come with challenges, however. As D'Souza noted, organisations often commit the error of training individuals for the skills that would have been valuable to the organisations' leadership in its formative years, as opposed to skills which have contemporary and future relevance.

## Managing Uncertainty and Geopolitical Flux

The second major challenge facing leaders is a perennial one – managing uncertainties regarding their own first-order assumptions. The assumptions that undergird long term planning in any organisation are based on models of the world that may prove inapposite. For example, while questioning the utility of analysing the world through the lens of a democratic/authoritarian divide, former Defence Secretary Malcolm Rifkind noted that existing challengers like Russia, which serves as a pacing threat, may have reduced salience if today's Sino–Russian entente endures the same fate as its Sino–Soviet predecessor. Similarly, the question of whether China will rise to the status of a superpower and what the ramifications of this will be are open to question. While speakers such as economist Gerard Lyons highlighted the importance of the seismic shift in economic power from west to east, James Sproule of LEK Consulting signposted the challenges that emerging powers such as China may face in becoming innovation-driven economies and escaping the middle-income trap with systems that depend on rule by law – in which the government sets rules but is not bound by them – as opposed to rule of law whereby the state is bound by the rules it sets. Perhaps as worryingly, the second-order effects of potential future scenarios are not altogether clear. For example, would a stagnant China be less geopolitically ambitious or, as some have argued, would a Chinese regime no longer able to seek legitimacy on the basis of economic progress seek military aggrandisement as a means of generating support?<sup>16</sup> In other words, are autocratic regimes at their most dangerous when they are strong or weak? Moreover, will the response of the world's sole superpower to these challenges be predictable or, as some have argued, has the critical political middle ground that sustained a foreign policy consensus in the US collapsed?<sup>17</sup>

From a naval perspective, this raises critical questions but also presents opportunities. As Vice Admiral Jerry Kyd noted in his speech, middle powers can often collectively work to manage uncertainty in eras where the intentions and trajectories of superpowers are not easy to discern. A globally postured Royal Navy could, then, act in conjunction with other regional partners to provide crucial public goods and abet the endurance of the rules-based international order. Kyd's speech illustrated that as the Royal Navy ponders which resources to generate and where to dedicate them, it will need to build flexibility into the development of its concepts of operations, procurement and the deployment of forces. The resources needed to cope with threats on NATO's northern flank are drastically different from those needed to play a role in maritime East Asia if China becomes a pacing threat. The nature of the challenge posed by rivals is also to some degree uncertain. A country such as Iran or Russia which restricts its challenges

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16. Susan Shirk, *China: Fragile Superpower* (Oxford: Oxford University Press, 2008).

17. See Peter Trubowitz and Charles Kupchan, 'Dead Centre: The Demise of Liberal Internationalism in the United States', *International Security* (Vol. 32, No. 2, 2007), pp. 7–44.

to the grey zone may, for example, become more risk acceptant if it perceives an opportunity for success by more overt methods or, alternatively, if it is suffering a crisis of internal legitimacy. Moreover, given that different contingencies may necessitate working with different partners, consideration ought to be paid to how the integration of forces beyond those of traditional allies with UK naval forces can be achieved.

One way the navy can mitigate uncertainty is by adopting a strategy of hedging – building the flexibility to meet or contribute to meeting multiple challenges as part of a coalition. Alternatively, the Royal Navy can opt for a policy of concentrating its resources for maximal impact. This would require the Royal Navy to identify and prioritise a particular challenge or geographical theatre which is deemed to supersede alternative potential missions in terms of its long-term relevance to national security. An analogy could be drawn with Admiral John Fisher's Royal Navy before the First World War, which withdrew from a number of peripheral missions to concentrate resources on Germany's High Seas Fleet.

## From Policy Objectives to Strategy – Towards a Strategy for Generating Seapower

The audience heard from the First Sea Lord in his keynote address that seapower is likely to be central to realising the vision of a global interconnected UK. The mobility of seapower and its centrality to maintaining the economic sinews of a globalising world make it a critical asset to a nation that expects to be forward postured globally. It is important to note, however, that seapower and naval power are not the same thing. Many continental nations have maintained large navies but only a few nations have had seapower – an interconnected web of institutional, economic and military assets centred on the sea.<sup>18</sup> A maritime strategy needs to nest naval strategy within this broader context. The audience heard from speakers such as Kenny and Kyd about the overarching priorities of the civilian and military sectors respectively – namely improving the competitiveness of the UK's maritime sector and maintaining the stable security architecture at sea on which this sector depends. However, a strategy must do more than aggregate the specific objectives of different parts of the maritime enterprise – it is a set of overarching principles which determines the roles of individual departments and sectors, identifies complementarities and contradictions between them and attempts to leverage the former while mitigating the latter. In effect, then, a strategy is more general than a statement of policy but less context-specific than a particular organisational plan. The conflation of strategy with statements of policy means that there is a niche to be filled in this area. There is, then, room to develop precisely this conceptual bridge between national policy and the actions of individual components of the maritime enterprise.

An example of such an overarching ends–means–ways chain was provided in a recent report by Kun-Chin Lin of Cambridge University, who convincingly made the case that the recent expansion of the Panama Canal represented an opportunity for the West to reorient the locus of maritime

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18. Andrew Lambert, *Seapower States: Maritime Culture, Continental Empires and the Conflict that Made the Modern World* (New Haven, CT and London: Yale University Press, 2018).

trade from the Indo-Pacific to an East–West route running from the Atlantic to the Pacific through the Panama Canal.<sup>19</sup> An archetypal maritime strategy might involve working to position the UK at the centre of the Atlantic component of this new maritime highway and prioritising the security of the key routes that straddle it. This would in turn delineate responsibilities for the department of transport and the navy. The former would need to prioritise the competitiveness of those ports and facilities within the UK that are most relevant to the transatlantic part of this route. The navy would reinforce this vision by focusing assets primarily on the Atlantic and the chokepoints that secure access to it, such as the GIUK (Greenland, Iceland and UK) gap. The purpose of this example is not policy suggestion – this need not be the UK’s maritime strategy. However, this vignette serves as an illustration of how a coherent geopolitical vision with a clear ranking of priorities and responsibilities can distil broad policy aims into concrete practice and delineate the priorities of individual departments/sectors within government.

## Conclusions

A number of conclusions and avenues for further work emerged from the day’s proceedings. Central among them are:

- There is a gap in the existing intellectual architecture with regard to an intermediate-level set of priorities between higher-level policy aims (maintaining a globally interconnected UK or the defence of a rules-based order, for example) and sector-specific aims. Effectively, articulating a strategy would serve as a bridge between higher-level policy aims articulated in documents like Maritime 2050 and the department/sector-specific aims of particular sectors of the maritime enterprise.<sup>20</sup> What is often described as strategy presently might more aptly be described as an articulation of policy aims.
- A corollary to this is the need for an emphasis on identifying sources of uncertainty regarding first-order assumptions and building mitigation strategies into naval planning. An operational-level counterpart to GST 6 that served to frame naval strategy within the context of multiple possible future horizons would usefully frame the uncertainties that planners need to take into account and serve as a starting point for discussions regarding mitigation.
- Given that the near- and long-term impact of technology may differ, the navy will need a twin-track approach to modernisation. In the near term, adaptations to breakthroughs in areas such as automation may be more tactical and operational in their nature while in the long term a broader transformation of the force may be necessary to remain competitive.
- The navy needs to consider the means by which it intends to approach civil–military integration. Specifically, to what degree can the navy adopt the fail fast model needed to work with an ecosystem of smaller firms and is this the optimal approach to leveraging

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19. Kun-Chin Lin, ‘Ports, Shipping and Grand Strategy in the Indo-Pacific’, in John Hemmings (ed.), ‘Infrastructure, Ideas and Strategy in the Indo-Pacific’, Henry Jackson Society and Asia Studies Centre, 2019.

20. Department for Transport, ‘Maritime 2050’.

innovation? More broadly, the navy needs to weigh the adaptive advantages of fostering an innovation-driven ecosystem vis the clarity of purpose achieved when operational concepts and requirements drive procurement. Both models have something to commend them and will need to be rigorously compared.

- Reconsidering the navy's manpower model will likely become a necessity. As the navy attempts to build a workforce with a 21<sup>st</sup>-century skillset, it will need to weigh the advantages of a patchwork model, including full-time workers, part-time workers and contractors, against a sustained effort to cultivate an internal pipeline. The flexibility and agility of the former model needs to be weighed against the sustained access to personnel and societal embeddedness that an internal pipeline-centric model provides.

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