

National Strategy in the Early 21st Century: Innovating for Uncertainty

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Introduction

This paper is concerned with military innovation and how, at the level of national strategy, it can be encouraged, guided and organised. Military innovation can only be understood in the context of a wider public policy problem: how should national military capabilities be maintained and managed in order to meet national strategic goals? I explore both the subject of military innovation, and the strategic context against which it is set, through the prism of recent experience in the United Kingdom. This is a narrow focus, perhaps, but also a valid and useful one for a number of reasons. First, the UK is an active and engaged strategic actor, regionally and globally. Second, the UK has a sophisticated defence economy with a very well-developed national strategic infrastructure. And finally, the UK is experiencing the effects of austerity, both generally across public policy and particularly in the defence sector.

The central proposition of this paper is that military innovation should be driven neither by an anticipated strategic threat or security challenge (e.g. terrorism or humanitarian operations), nor by a preferred operational capability (e.g. maritime operations on the littoral, armoured warfare or long-range air-strike), and nor should it be determined by any given geographical, physical or non-tangible environment (e.g. the Arctic, arid and desert areas, or cyberspace). Rather than threat, capability or environment, this paper will argue that military innovation should correspond to and be driven by the idea of *uncertainty*. I develop this argument in the form of three questions. First, what is strategy for? Second, what is military innovation for? Third and finally, what are governments for?

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1. What is Strategy For?

There is a well-developed debate as to the meaning and application of terms such as ‘grand strategy,’ ‘national strategy,’ ‘military strategy’ and mere ‘strategy.’ Those analysts and commentators who have the most enthusiasm for that debate might be relieved to know that it shows little sign of coming to a conclusion. For the purposes of this paper, however, strategy can be defined straightforwardly as the use of national resources for the achievement of national ends. It follows that strategy is not exclusively military; resources might just as well be diplomatic, economic and cultural as military. But where military means are considered, strategy can be understood as the point at which the political and the military intersect. In this sense, ‘strategy is what gives policy its ways and means, and military action its ends.’² Put another way, strategy acts as a two-way transmission device: political choices, decisions and directions are transmitted in one direction from policy-makers to military commanders, while in the other direction options and constraints are transmitted from military commanders to policy-makers.

But strategy—in any sphere—is more than merely a process. Strategy is about purposive activity; the pursuit of ends and the achievement of plans. Strategy has a point of departure but is not content to remain at that point or merely to describe it. Strategy follows a vision and is therefore necessarily concerned with the future. Williamson Murray makes this point most succinctly:

What distinguishes leaders who have attempted to develop and execute a grand strategy is their focus on acting beyond the demands of the present. In other words, they have taken a longer view than simply reacting to the events of the day.... Grand strategy involves some willingness and ability to think about the future in terms of the goals of a political entity.³

² Paul Cornish, (written evidence), *Who Does UK National Strategy?* (London: The Stationery Office, House of Commons Public Administration Select Committee, HC435, 18 October 2010), p. Ev. 84, para. 3.

³ Williamson Murray, ‘Thoughts on grand strategy’ in Williamson Murray, Richard Hart Sinnreich and James Lacey, *The Shaping of Grand Strategy: Policy, Diplomacy and War* (Cambridge University Press, 2011), pp. 2, 5.

The difficulty for strategists (and for anyone taking an interest in the future, for whatever reason,) is that it is of course impossible to predict the future. Yet for strategists, and *particularly* for strategists, it is impossible not to try. JK Galbraith reportedly divided forecasters between ‘those who know they don’t know, and those who don’t know they don’t know;’ a comment which does at least make it possible to distinguish between those strategic forecasters who have wisdom in their ignorance and those who do not. For strategists concerned with matters of security and defence, the problem is compounded by the likelihood that the unknowable future will also be very diverse, complex and urgent. It is in the nature of security forecasts to tend towards worst case analysis but what is noticeable, in the early years of the 21st century, is that strategists are denied the comfort of a worst case around which to plan force postures and suchlike. Instead, the world that is portrayed in a series of forecasts, assessments and scenarios from a wide variety of credible organisations, is one of *risk*; security risks will shift across domains and sectors and back again, and will vary in intensity. For the strategist of security and defence the future will be neither black nor white. Countries such as the UK might not be at war, legally speaking, but neither will they be entirely at peace. Security threats might not be ‘existential,’ in the Cold War sense, but neither will they be trivial. It will be difficult to set priorities among a wide range of security challenges—both (natural) hazards and (man-made) threats. And it will be hard to discriminate between short and long-term challenges to security and well-being. Every sort of security challenge might threaten to arrive at once. In these circumstances, making strategic choices will be a very high risk activity: if the correct decision is made then it is just as likely to be by good fortune as by good judgement; and if the wrong decision is made—in matters of security and defence, after all—then the penalties could be severe and enduring.

The problem of imperfect knowledge is exacerbated by the problem of imperfect resources. Even in the best of economic conditions, no society could afford to have everything and to do everything it might wish with regard to security and defence. There can be no such thing as a limitless national economy; this has always been a policy fantasy and one which becomes all the more evident during times of recession and austerity. The work of Adam Smith is often cited by politicians seeking to make a robust case for national security and defence, and for the expense which must come as a result. Certainly, Smith did

consider ‘the first duty of the sovereign’ to be ‘that of protecting the society from the violence and invasion of other independent societies;’ a duty that ‘can be performed only by means of a military force.’⁴ This seems clear enough, but it should come as no surprise that Smith was not willing to overlook the state of the national economy in his zeal for national defence. Thus, Smith observed that the ‘first duty’ placed on any government ‘grows gradually more and more expensive, as the society advances in civilization,’⁵ and this observation drew him to a conclusion which qualifies the ‘first duty’ argument in important ways:

In a civilized society, as the soldiers are maintained altogether by the labour of those who are not soldiers, the number of the former can never exceed what the latter can maintain, over and above maintaining, in a manner suitable to their respective stations, both themselves and the other officers of government, and law, whom they are obliged to maintain.⁶

It would seem that for Adam Smith there was something prior to the ‘first duty’—that is, society itself and the health of its economy. To paraphrase rather crudely; a modern society which paid insufficient attention to its financial well-being, to the stability of its economy and to its industrial capacity would scarcely qualify as a society, would not be worth defending and would, in any case, barely be able to do so.

If strategy is the two-way transmission device described above, then this is a device which is expected to function in the most difficult of circumstances. Strategy is no longer—if indeed it ever was—simply a matter of identifying security challenges as they evolve and allocating the necessary resources to meet and defeat those challenges. The late Michael Quinlan, formerly the senior official in the UK Ministry of Defence, ridiculed this notion most effectively:

There is an occasional caricature-stereotype of defence planning which supposes that it is—or if it is not, that it ought to be—a

⁴ Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, A Selected Edition ed. Kathryn Sutherland (Oxford University Press, 1998), p. 393.

⁵ Smith, *Wealth of Nations*, p.406.

⁶ Smith, *Wealth of Nations*, p.398.

basically linear process. One starts by identifying one's commitments; one assesses professionally what forces are needed to meet them; one costs these; and then one sends the bill to the Treasury, which pays up. It is not only in the final particular that this model departs from reality.⁷

Instead, strategy is the pursuit of national goals in an increasingly complex and shifting international environment with increasingly limited national resources. In many respects there is little new in this observation. In matters of security and defence, national strategy has always been an interplay between three components: the policy vision or goal (the 'ends'); the pursuit or implementation of that vision (i.e. military strategy and operations, or the 'ways'); and the resources allocated to do so (i.e. the defence budget, or the 'means'). As Hew Strachan has observed, strategy is an iterative process: 'a dialogue where ends also reflect means, and where the result ... is a compromise between the ends of policy and the military means available to implement it.'⁸ What is distinctive about the current strategic environment, for the UK as much as for other developed economies, is that the combination of strategic uncertainty with economic scarcity feels more pronounced than before, such that national strategy is as much a matter of ensuring that the right choices and allocations are made, as it is of ensuring that wrong ones are not. Strategy, by this view is more than a device which connects various components ('ends,' 'ways' and 'means'). Particularly in the pressing geopolitical and economic circumstances of the early twenty-first century, strategy is increasingly about the management of complexity and uncertainty; strategy is a matter not simply of making choices and taking decisions but is also a matter of *not* making firm decisions before it is necessary to do so. In other words, strategy is not just about making intelligent and safe judgements, but of being able to *suspend* judgement in a way which is both intelligent and safe. It is the need for strategic indecision that should influence military innovation and should shape our expectations of it.

⁷ Sir Michael Quinlan (PUS MoD, 1988-92), 'British defence planning in a changing world,' *World Today* (48/8-9, 1992), p.160.

⁸ Hew Strachan, 'The Lost Meaning of Strategy,' *Survival* (Vol.47, No.3, Autumn 2005), p.52.

2. What is Military Innovation For?

Military innovation embodies a relationship between technology and strategy; a relationship which falls into several categories. The first, and most obvious, is that series of innovations (usually involving weapons) which have proved to be tactically decisive (i.e. battle-winning). The expectation that military innovation will confer a decisive advantage in battle has been a particular feature of industrialized warfare, but the development and application of decisive weapons long pre-dates the industrial revolution, and has taken a variety of paths. Military history records weapon developments which have been remarkably simple, as well as others which have been remarkably sophisticated. Some have been achieved in a singular moment of invention while others have evolved through incremental improvement. The list of decisive battlefield weapons would almost certainly include the crossbow, the longbow and the bayonet, as well as a series of developments in firearms: the flintlock, the breech-loader, the rifled bore, the pistol, the machine gun and so forth.

The second category would include those tactically decisive developments which have had nothing directly to do with weaponry but have acted as a 'force multiplier' in battle: the stirrup, camouflage and battlefield radio communications come readily to mind. A third category might include those moments at which innovation has had a decisive effect at the strategic level (that is, the level at which the outcome of war itself is shaped, rather than battles won): radar; the long-range bomber aircraft; the submarine; and the Colossus code-breaking computers used by the British to decrypt German signal traffic during the Second World War. A fourth and final category would encompass innovations which have had a paradigm-changing or metastrategic effect in that they have altered the very character of war. The development and use of the atomic bomb in the 1940s serves as the most obvious example of innovation on this level. More recently, some have argued that warfare has been transformed fundamentally by developments in information and communications technology—a phenomenon known since the early 1990s, in the United States and elsewhere, as the

‘revolution in military affairs.’⁹

It is not simply the material products of military innovation that are of interest, but also the changing dynamics of the relationship between technology and strategy. The best illustration of this point is the considerable effect which the industrial age had on the technology-strategy relationship, enabling technology to become more influential than ever before. In *The Social History of the Machine Gun* John Ellis describes the American Civil War as ‘the first example of an industrialised conflict, in which technological advances dictated *much of the actual conduct of the war*.’¹⁰ Michael Howard observes a broader social effect arising from the same phenomenon: an effect which would change the style of warfare fundamentally, endowing it with certain characteristics with which the twentieth century was to become all too familiar. Nineteenth-century industrial mass production of weaponry, argues Howard, with such innovations as finely machined and interchangeable weapon parts, made ‘mass participation in warfare both possible and necessary.’¹¹

History offers plenty of examples of the decisive effect of military innovation on the conduct of military operations, and in some cases on the character of war itself. But the hierarchy in the technology/strategy relationship was always clear: technology (no matter how innovative or decisive) served the higher politics of national strategy, and not vice versa. National strategy was not something to be determined by technology, and was in any case too complex and refined to be understood by mere technologists, engineers and inventors. The Second World War, however, brought about a blurring of these boundaries and altered the dynamic of the relationship. In the case of the United Kingdom, for the military planners who sought to reorganize national strategy in the aftermath of the war, the military technology seen during the conflict—air and rocket attacks, the use of submarines and, of course, the atomic bomb—had left an impression. This impression was so deep that the UK’s military leaders agreed

⁹ See e.g. David Jablonsky, *The Owl of Minerva Flies at Twilight: Doctrinal Change and Continuity and the Revolution in Military Affairs* (Carlisle, PA: US Army War College, Strategic Studies Institute, May 1994); Michael Mazarr, *The Revolution in Military Affairs: a Framework for Defense Planning* (Carlisle, PA: US Army War College, Strategic Studies Institute, June 1994); and, for a broader view, Colin Gray, *Modern Strategy* (Oxford: Oxford University Press, 1999), pp. 200–205, 243–54.

¹⁰ John Ellis, *The Social History of the Machine Gun* (Baltimore: Johns Hopkins University Press, 1975), p. 47 (emphasis added).

¹¹ Michael Howard, *War in European History* (Oxford: Oxford University Press, 1976), p. 120.

that technology should henceforth be understood as a *partner* to strategy. It was accepted that the principles of defence policy could no longer determine technological developments; the two must now interact.¹²

The second half of the twentieth century saw further developments in the technology-strategy relationship, with the most far-reaching implications for policy and strategy, and for the very idea of war. No longer the *subordinate* to strategy it had been for so long, technology also escaped the bounds of the *partnership* with strategy envisaged by the British chiefs of staff to become the *driver* of strategy. With the advent of atomic, nuclear and thermonuclear weaponry, with intercontinental-range ballistic missiles capable of ever-increasing accuracy, and with dramatic progress in communications and computing technology, war between the most technologically advanced states (or the threat of it) promised unprecedented and unimaginable levels of destruction. In Ellis's view, technology was beginning to have a 'dehumanizing' effect on war: 'On the conventional battlefield men are increasingly being replaced by electronic devices ... Men are merely helpless bystanders. With the advent of nuclear weapons this process has been carried to its logical conclusion ... Nuclear weapons are controlled by unimaginably complex electronic systems.'¹³ These 'unimaginably complex systems' were, of course, managed (or at least monitored) by human beings, albeit far removed from the battlefield. Nevertheless a nuclear conflict, as envisaged during the Cold War, would have less to do with organized armies deployed in the field as technology placed 'increasing power in the hands of highly qualified technicians.'¹⁴ David Edgerton makes a similar point: 'The atomic bomb, the great glory of civilian academic science ... led to a new kind of war or non-war directed by civilian Dr Strangeloves.'¹⁵

The late twentieth and early twenty-first centuries have witnessed another shift in expectations, whereby military innovation and strategy have become conflated, or perhaps whereby technology has become a sufficient explanation for what can, and cannot, be expected of strategy. Writing in the last years of the

¹² Paul Cornish, *British Military Planning for the Defence of Germany, 1945–50* (London: Macmillan, 1996), p. 105.

¹³ Ellis, *The Social History of the Machine Gun*, p. 180.

¹⁴ Howard, *War in European History*, p. 120.

¹⁵ David Edgerton, *The Shock of the Old: Technology and Global History since 1900* (London: Profile, 2008), p. 140.

Cold War, Barry Buzan wrote of what he referred to as a ‘technological imperative’ in strategy. Buzan summarised the traditional technological-strategic relationship in the following way: ‘Technology is a major factor in determining the scope of military options, the character of military threats, and the consequences of resorting to the use of military force.’¹⁶ Buzan then went on to describe ‘relentlessly expanding human knowledge that drives the technological imperative,’¹⁷ and seemed to suggest that a watershed had been reached. If the task of strategy is to ensure the security of states, then the challenge, he argued, is ‘to adjust military strategy to meet that end in an environment dominated by continuous and often quite radical technological and political change.’¹⁸

Some 25 years after its publication, there are a number of comments to be made about Buzan’s insightful analysis. The first is that in recent years the pace of technological development (in semi-conduction, micro-processing, communications and data handling for example) has been so rapid that strategy, in all its ponderous deliberation, can barely keep up. As such it becomes increasingly difficult to conceive of a stable, reasonably predictable relationship between innovation (both in the general sense and specifically military) and strategy, and harder still to suppose that innovation will be rationalised and organised within some kind of strategic or security policy framework. In strategic terms, in other words, innovation is making less and less sense. Second, technological innovation is now as likely, if not more likely, to be a response to commercial opportunity or international demand as it is to the national security requirements of any country in which an innovative private sector company might be based. Innovation therefore has its own momentum and has become largely decoupled from a national strategic context where, in the past, it might have expected stimulus and investment. Third and finally, in the two decades since the end of the Cold War it has become clear that there are risks associated with technological determinism, or at least of expecting strategic solutions from this or that ‘technological fix.’ Technologically-inspired confidence of this sort seems increasingly inappropriate in current circumstances. What will be the character and urgency of security challenges and military threats which the UK

¹⁶ Barry Buzan, *An Introduction to Strategic Studies: Military Technology and International Relations* (London: Macmillan, 1987), pp. 6–7.

¹⁷ Buzan, *An Introduction to Strategic Studies*, p. 290.

¹⁸ Buzan, *An Introduction to Strategic Studies*, p. 289.

(or any other country) will face over the forthcoming 10-25 years? Which military options will be needed? Which of these options will be affordable and what, otherwise, is the appetite for risk? And finally, where the resort to military force is contemplated, how far will the consequences of that decision be tolerated by public opinion, the media and allies, for example?

A different conception of military innovation is now required. Rather than being the *subordinate* to, the *partner* or the *driver* of a more or less coherent institution known as strategy, and rather than being the sufficient *explanation* of that institution, technology and innovation must instead be given the role of *enabling strategic agility*. At a time of great fluidity in all things concerned with national strategy, the purpose of military innovation should be to create a range of options from which the most appropriate can be chosen by policy makers and strategic leaders at the right moment. Military innovation can undertake this enabling function on three levels: technical, procedural and operational. First, and most straightforwardly, military innovation could seek to ensure cross-domain versatility in existing military systems. For example, it might soon be possible to paint armoured vehicles with a substance which will not only indicate when chemical weapons have been used but will also absorb and neutralise the toxic substance.¹⁹ More substantially, there is a compelling case for a ‘paradigm shift from platform to payload’ in thinking about military equipment. The United States Chief of Naval Operations puts the argument in the following way:

We will need to shift from a focus on platforms to instead focus on what the platform carries. We have experience in this model. Aircraft carriers, amphibious ships and the littoral combat ships are inherently reconfigurable, with sensor and weapon systems that can evolve over time for the expected mission. As we apply that same modular approach to each of our capabilities, the weapons, sensors, unmanned systems, and electronic warfare systems that a platform deploys will increasingly become more important than the platform itself.²⁰

¹⁹ ‘Chemical warfare: gas-guzzling paint,’ *The Economist*, 18 July 2012.

²⁰ Jonathan Greenert, ‘Navy 2025: Forward Warfighters,’ *Proceedings Magazine* (Vol. 137/12/1, 306), December 2011: www.usni.org/magazines/proceedings/2011-12/navy-2025-forward-warfighters

At the procedural level, an enabling approach to military innovation could see improvements in procurement and acquisition lead times, in testing, redesign and refitting; all in order to ensure that the procurement system can produce military equipment which is close to what *is* required, rather than to what *was* required some 10 years previously when the initial requirement was written. Private sector manufacturers might be encouraged to develop equipment prototypes which could be ‘stress tested’ by potential users, long before full production is contemplated and before large-scale resources are committed.²¹ Further thought and effort could also be committed to developing the idea of design-, production- and control-centred ‘virtual prototyping’ and ‘virtual manufacturing’ (VP/VM), where very high-powered and sophisticated computing is used to create a synthetic environment in which the design, affordability, fabrication, assembly, testing and even manufacture of new equipment can all be simulated. VP/VM is already well developed in very large-scale manufacturing sectors such as aerospace, motor vehicles and ship-building, but there should be scope to use these ideas for smaller, less complex products with very short production runs.

Finally, at the organisational level, military innovation could seek to improve the prospects for rapid reconfiguration and interoperability between different military services and systems, and between the armed forces and other levers of national and alliance power. None of these suggestions are new; these are all ideas with which the world of national strategy and defence planning has been familiar for years, if not decades. Yet it is always possible to rationalise familiar ideas in a different way, and thereby endow them with new authority and relevance. And what is now required is indeed something more sophisticated, binding and enduring than the ‘joint operations’ idea which has been pursued for many years, and too often with little appreciable result. In that vein, Julian Lindley-French has introduced the idea of ‘organic jointness’ which he describes as:

an entirely new way of thinking about the relationship between the world, armed forces, technology, the societies they serve and, above all, ideas. The specific challenge concerns how small

²¹ For a brief illustration of this point see ‘Military innovation: stress testing,’ *The Economist*, 26 May 2012.

military ‘producers’ meet their security and defence obligations in a very large and unstable ‘market’ in which the defining feature is and will be friction and turbulence and the defining factor cost.²²

If the traditional rationale for military innovation was to find the best answer to a given strategic problem, or the best response to a given strategic challenge, then the new rationale should instead be to produce answers to problems and challenges *as they arise*. In other words, military innovation should not be identified closely with a given strategic template or strategic choice. Rather, innovation should be undertaken precisely in order to be able, intelligently and safely, to avoid being trapped within a strategic template or by choices which prove to have been misguided or incomplete. Otherwise, in the complex and fluid conditions of early 21st century international security, military innovation could prove, paradoxically, to have been *anti*-strategic.

3. What are Governments For?

If, as I have argued, the task of strategy is to remain as open-minded and indecisive for as long as possible, and if the task of military innovation is to make this indecision safe and rational by enabling strategic agility and by offering responses to strategic challenges as they arise, then the task of government is to provide the intellectual and policy underpinnings for this position. Rather than treat uncertainty as a problem to be avoided (or, worse still, to be ignored), government’s role must be to embrace uncertainty as a central feature of the strategic environment.

In the United Kingdom the standard, albeit intermittent response to strategic change has been to conduct a security and/or defence review. Most conceivable types of review have been attempted: finance-limited, threat-oriented, capabilities-driven, effects-based and foreign policy-led. With recent experience in Iraq, Afghanistan and elsewhere in mind, there is a discernible tendency towards a new type of review: the *commitments-defined* (or even *geopolitical*) *review*. And given that the UK has recently embarked upon a fixed, five-yearly

²² Julian Lindley-French, ‘NATO: Connected Forces, Connected Minds?’ Speaking Truth Unto Power (Blog), 23 July 2012: <http://lindleyfrench.blogspot.co.uk/2012/07/nato-connected-forces-connected-minds.html>

programme of reviews, it might even be that yet another approach—the *rolling review*—has been adopted as policy. The flaw common to all these review mechanisms is the assumption that there is a dominant set of strategic problems to be identified after careful analysis, and that the same analysis will suggest the best solutions to those problems; solutions which will, of course, be available when required. Yet there is strength here, too. The redeeming feature of the history of defence policy-making and planning in the UK is its very strong foundation in pragmatism and incrementalism which could mean that the UK is uniquely well-suited to developing a new, more dynamic approach to the strategy/technology relationship. But if the UK is to lead the way with what I have described as a ‘higher form of muddling through,’²³ then certain things will be expected of its government.

The first task for government is to express political and intellectual honesty about the strategic context; the strategic future is never clear and in 2012 it appears more opaque than normal. There is a strong tendency to define national strategy in terms either of present commitments or of a ‘predictable’ future. Both of these siren calls must be resisted. In a 2009 article tellingly entitled ‘War has changed. We need men on the ground, not aircraft carriers,’ Allan Mallinson argued that ‘real and present dangers must take priority over possible future threats.’²⁴ There is a dangerously seductive, ahistorical strategic assumption at work here; the idea that any future conflict in which the UK is involved will be along the lines of a rural counter-insurgency fought in a desert seems to expect rather a lot. Others talk with certainty that the future will be about ‘hybrid warfare,’ about ‘war amongst the people’ or about ‘behavioural conflict.’ These ideas might prove to be accurate, but they might not. And they also seem to approach the problem of strategy from the wrong end. Warfare, or the *character* of war, as Clausewitz observed, probably will change in the future—it often does. But the *nature* of war itself does not change. War—and, it might be said, strategy—will continue to be the servant of policy. So if the challenge is to know how war will appear in the future, and how and why it will remain a strategic institution, then analysts should look first to policy, and it will be singularly

²³ See Paul Cornish, *Strategy in Austerity: The Security and Defence of the United Kingdom* (London: Chatham House, 2010), pp.25-27.

²⁴ Allan Mallinson, ‘War has changed. We need men on the ground, not aircraft carriers,’ *The Times*, 8th May 2009.

difficult to predict to how policy will have developed in 10, 15 or 20 years' time. Governments should have the confidence, instead, to adopt the strategic equivalent of the 'analytic eclecticism' suggested by Rudra Sil and Peter Katzenstein:

Without a dose of eclecticism, scholarship based on a single paradigm risks mistaking some trees for the forest.... analytic eclecticism offers opportunities to enhance our collective ability to communicate across paradigmatic boundaries, and to engage normative and policy issues of interest to a broader public.²⁵

As an analysis and policy framework, 'strategic eclecticism' will allow movement from one strategic scenario to another and to operate in the gaps between them.

The second task is to reject the austerity-led fallacy of strategy and defence reviewing; that, by some strange magic, austerity makes it easier for politicians and strategists to see into the future, to identify the strategic challenges that will eventuate, and to prepare accordingly. But of course the opposite must be true. Austerity's effect on policy is to narrow the range of options, making the future more, rather than less difficult to manage. The UK national strategic debate is currently preoccupied with discussions about this or that capability: Typhoon combat aircraft; aircraft carriers and the F-35; unmanned aircraft; the role of armour; the role of the submarine-based nuclear deterrent and so on. The truth which informs all of these discussions is that the UK can afford only a narrower range of these systems and fewer of each. Yet politicians switch from truth to mere guesswork when they attempt, usually in the medium of a strategy review, to convince readers that this or that capability will be necessary to meet this or that commitment which is sure to be necessary at some point in the future. Austerity forces reductions in the national force posture with the result that strategic options are restricted. But it is specious then to pretend that resource constraints will somehow organise and discipline the future, or that the future has conveniently narrowed itself to fit the resources available.

Third, under mounting pressure to make reductions in public spending,

²⁵ Rudra Sil and Peter J. Katzenstein, *Beyond Paradigms: Analytic Eclecticism in the Study of World Politics* (London: Palgrave Macmillan, 2010, 2010), pp.217-218.

governments must paradoxically be willing to invest time, intellect and particularly resources if those reductions are not to reduce strategic agility still further (and at a time when agility is most needed) and if a more dynamic and flexible relationship between strategy and technology is to be encouraged. There must be investment in risk analysis and management and in ‘risk moderators’ such as early warning systems, intelligence services, language training and so on. And there must also be investment in science, technology and innovation.

Conclusion

The underlying premise of this paper is that options are the most highly-prized strategic commodity in the circumstances prevailing in the early 21st century. The role of military innovation should be to maximise the number, type and scale of options available to policy-makers and strategists. But ‘innovating for uncertainty’ is a challenge: organisationally, technologically, politically, financially and conceptually. It requires a state of open-mindedness, imaginativeness and intellectual versatility. And it also requires confidence, on the part of governments, to take risks in creating a system which will have the capacity to generate strategic solutions as they are required, rather than focus closely on one strategic template or another. The political difficulty should not be under-estimated; particularly in conditions of austerity, ‘keeping options open’ will be harder to argue than identifying and working towards an explicit strategic scenario. Confidence will also be required to invest at risk in the hard infrastructure of an agile national strategy by funding research and technology adequately, especially when there are contending pressures on public spending.