

Air Power Review

Special Edition:
Considering the Conceptual Component

Volume 18 Number 1 Spring 2015

**Conceptualising the Conceptual
Component: One Airman's Perspective**
Group Captain Paul Wilkins

**Revitalising the Conceptual
Component: Addressing Britain's
Future Strategic Challenges**
Lieutenant Colonel Dan Brown

**Developing a Flexible Royal Air Force
for an Age of Uncertainty**
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**Delivering Flexibility through People:
Harnessing Human Capability**
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**The Battle of France, Bartholomew and
Barratt: The Creation of Army
Co-operation Command**
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**The United Kingdom's National Interest:
A Framework & Definition**
Air Vice-Marshal Andy Turner

What is the Utility of the Fifth Domain?
Squadron Leader Paul Withers

Viewpoint
Professor Philip Sabin

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In February of this year, to mark the centenary of the formation of 17(R) Squadron a unique line up of aircraft was assembled at Edwards Air Force Base.



The second production Handley Page Heyford I, K3490, of 99 Squadron under mock attack from a Hawker Fury during an air gunnery training flight from Upper Heyford on 28 November 1933.



Taranis UCAV demonstrator taxiing at BAe Systems in Warton, Lancashire. (Picture: Ray Troll, BAe Systems)

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The evacuation of the British Expeditionary Force from Dunkirk in June 1940. Image shows a Hudson aircraft of Coastal Command over the beach with burning oil tanks in the distance.



The arrival of the UK's first F35B Lightning II Stealth Fighter Aircraft at Edward's AFB America on the 13th Jan 2015.

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Foreword

by Squadron Leader Paul Baroni

Spring 2015 sees Air Power Review (APR) embark upon a special edition themed around the highly vaunted and often misunderstood Conceptual Component. Inaccessible to many and seemingly incidental to even more (present company excepted), some would challenge ‘what has deep thought and reflection on air power - or defence matters - got to do with its practical delivery in the 21st Century?’ Furthermore, how could this particular Component demand as much focus or investment as the Physical or Moral Components which are surely the two weight-bearing pillars of fighting power?

The Physical – by its very nature – is tangible. You can touch and see aircraft, armoured vehicles and capital ships. Military personnel are counted (and costed) in numbers to produce an all-up audit of a nation’s fighting capability when combined with the hardware that they man. Similarly, all military practitioners have been submersed in the Moral Component from the day they attested. Through a structured programme of military training, the values and standards of the fighting body are driven home into the mind of the recruit and will remain, sometimes, throughout a lifetime of service and beyond.

Chapter 2 of JDP-0-01 (5th Edition), the British Military’s capstone doctrine document, opens with a quote from soldier turned airman, T.E. Lawrence – ‘With two thousand years of examples behind us we have no excuse, when fighting, for not fighting well’. Implicit in Lawrence’s statement is recognition of the centrality of the Conceptual Component to effective fighting power. He encapsulates the need to turn experience into a foundation for the principles and doctrines of successful military activity. The Conceptual Component is seen as the foundation on which to build the Physical and Moral. Without using experience, establishing method and applying thought, how can a military successfully innovate, develop and be ready to fight the next war, rather than the previous one?

It is noteworthy that Lawrence’s career path was much less conventional than most of his contemporaries and could be described as more of a portfolio ‘career’, akin to the model expected of the young airman and airwoman of the 21st Century. Starting his career as an archaeologist, whilst working as an army intelligence reservist, before becoming a regular army officer, Middle East and insurgency specialist. Then onto the Foreign Office before enlisting in the RAF for a second career. It sounds like a perfect case study of Future Force 2020, the Whole Force Approach and New Employment Model all rolled into one.

Are the new air power practitioners of the 21st Century comparable to their early 20th Century forebears and what does this have to do with the Conceptual Component? Perhaps more so than it would initially appear. The fluidity, blistering pace of technological advancement and constant change of today echoes this period, with strategic instability,

conflict, financial, political and social turbulence the characterising features between 1900 and 1945. Against such a backdrop, perhaps the only consistent factor for the military is our Conceptual edge. Success in the current and future operating environment will be, more than ever, dependent on our talent for critically thinking through our problems and challenges, in order to apply a more strategic, long-term approach as a military, whilst retaining the agility to adapt quickly. Nowhere is this more relevant than in the air environment.

The articles in this edition of APR – though different in subject and purview – each capture a sense of the need to think, adapt and innovate across air forces and Defence in general. To set the scene, Group Captain Paul Wilkins, Editor of APR, Director of both the RAF Centre for Air Power Studies (RAF CAPS) and the Directorate of Defence Studies (RAF) offers his perspective, as an airman, on the challenges and work ahead for the RAF in leveraging and exploiting the Conceptual Component for the benefit of the Service, UK air power and the nation. This Viewpoint is intended to open up the debate and invites fellow airmen and women, as well as academics, commentators and other military practitioners to take view and join the discussion.

In the spirit of offering a view, USAF Lieutenant Colonel Dan Brown, who, having recently completed an exchange tour at the RAF's Air Warfare Centre is well placed to conduct an external, professional assessment of how UK Defence should prioritise and reinvigorate its Conceptual Component. In *Revitalising the Conceptual Component: Addressing Britain's Future Strategic Challenges*, the author sets out his argument that the Conceptual Component is the foundation of every military activity, and, as such should be prioritised accordingly. Brown illustrates how UK Defence is facing an especially wicked set of challenges – namely, the conclusion of 14 years of enduring hostilities, popular rejection of interventionist policies and the ongoing austerity measures facing successive governments, all of which threaten focused military thinking. Set against examples of US doctrine and Clausewitz's writings on this subject, Brown finds that there is sometimes a lack of clarity in UK doctrine – particularly in articulating its own purpose - which clouds thinking and even confuses the reader over some of the fundamental tenets of what doctrine is for. Doctrine, theory, intellectual thought and critical thinking are all said to form part of the Conceptual Component. However, Brown asserts that by getting doctrine right, a clear message will be given to government, allies and military personnel – that UK Defence is ready to transform and change to meet the demands of the 21st Century and for the UK to retain its global military status addressing this is key.

Our third article continues this theme but narrows its focus somewhat on to the RAF. *Developing a Flexible Royal Air Force for an Age of Uncertainty* is written by CAS' Fellow Group

Captain Paul O'Neill examines how the RAF will need to change to meet the challenges of the current century. In the first of his two articles on this subject, the author undertakes a thorough and insightful examination of organisational flexibility, looking at the competing priorities of mass and agility. Using organisational theory and architecture as a lens through which to critique and understand the current RAF structure, an 'Adaptive Design Model' is offered which builds upon and develops the Whole Force Approach but with a less homogenous structure and more differentiation between the 'Periphery and Core' parts of the organisation, in order to drive diversity, innovation and flexibility. Making such strategic, long term adjustments is recognised as challenging but these structural, organisational and process changes must be accompanied by an investment in human capability to ensure transformation is successful – the subject of Group Captain O'Neill's second paper.

This second paper continues the core theme of 'challenge' to kick-start debate within the RAF. The foundation of the author's argument is based upon a need to increase diversity and differentiation within the Service's workforce. Looking at various personnel and Human Resources strands including recruitment, retention, talent management, rewards, training and education, O'Neill proposes a series of fresh approaches which would fundamentally change the way in which the RAF 'does people'. Arguing for a re-invigoration of talent management and professional education wider than the current narrow focus on an Executive Stream, the author argues that the Service's focus should be on those skills and attributes that facilitate flexibility, lateral thinking and conceptual agility. To achieve this shift in organisational mind set, it is argued that the very culture of the organisation has to be re-visited and changed.

Our fifth article is an examination of the development of the RAF in the inter-war period. Through investing in air defence, strategic bombers and in establishing the world's preeminent aircraft development and production industry, Britain planned to keep an attritional continental war at arm's length. Matthew Powell's article, *The Battle of France, Bartholomew and Barrett: The Creation of Army Co-operation Command*, discusses how the Battle of France shaped air-land integration at the outset of the Second World War. The investigation that followed the evacuation of the Army's British Expeditionary Force from France in 1940 saw the British Army attempt to place the blame for its failure on other factors, one of which was deemed to be the RAF. Powell's assessment that the British Army was not configured, trained or ready to fight a modern war at that time, casts a light on how it misunderstood the way its German counterpart thought, trained and fought for all arms war. The fundamental absence of a joint understanding of the application of air power was evident between all 3 Services but particularly sensitive post-Dunkirk.

The RAF's placatory gesture was the creation of Army Co-operation Command which Powell assesses as able to achieve very little in practical terms, showing what little store the RAF set in tactical air support at this stage of the war. Despite some limited successes in air land co-operation emanating from this new organisation, the RAF senior leadership showed little appetite for the development in army-co-operation until the North African campaign in 1942, where closer integration laid some more solid foundations for air-land doctrine. By the time of its disbandment in July 1943, the focus of air power partly shifting to one of support to the impending land operation in North West Europe and inevitably perhaps, air-land integration became more of a priority for the RAF and the war effort, sponsored by Coningham and Tedder.

Moving on from the first half of the 20th Century, our next article is written by Air Vice-Marshal (AVM) Andrew Turner, a CAS' Fellow and Air Officer in Command of the RAF's Number 22 (Training) Group. In *The United Kingdom's National Interest: A Framework & Definition*, AVM Turner seeks to push to the fore a topic that the author describes as having little academic focus or common understanding in terms of politics and policy. AVM Turner argues that a clearer, more precise definition of what the UK's 'vital' national interest is would help in establishing a more coherent future national strategy that provides continuity of focus for UK defence and national security. In the absence of such a definition, the author highlights the risks to UK Defence in 'hunting operational aims' and the potential miscalculation of training, readiness and equipment procurement. In taking the time to think about what the nation's national interests actually are, following the geo-political, demographic, social and cultural changes since the end of the Second World War, the UK will ensure that it sets itself on a more sound strategic footing over the course of this century.

Our final article of this edition is written by CAS' Fellow and RAF Intelligence Officer, Squadron Leader Paul Withers, recipient of King's College London's prestigious Lawrence Freedman Award (2014) for best War Studies dissertation. In *What is the Utility of the Fifth Domain*, Withers sets out to evaluate whether the increasing importance of cyberspace in military operations justifies its categorisation as a warfighting 'domain' (or 'environment' to use UK doctrinal language) by the US Department of Defense? The author argues that this classification is somewhat controversial as cyber is absent of the clearly tangible Physical properties of the land, air, sea and space domains/environments. In a fascinating examination of the inevitable militarisation of cyberspace Sqn Ldr Withers assesses the 'utility' of applying this status to cyberspace, how, both doctrinally and practically, this will weave into the other domains and in what way the existing theories of war will apply to this new domain/environment. The author concludes with the perceptive insight that only when cyberspace is brought into the warfighting mainstream, becoming an integrated

Component of joint warfare, will validation of its true success and acceptance as the 'Fifth Domain' be achieved.

APR Spring concludes with a Viewpoint, offered by Professor Phil Sabin from King's College London. Following his recent appearance at the House of Commons Defence Select Committee Inquiry as one of the UK's preeminent air power academics, Professor Sabin was asked to comment on the progress and current state of the UK MOD's Future Force 2020 since its Conceptual inception in the 2010 Strategic Defence and Security Review (SDSR). Sabin's Viewpoint is given as a 'tour d 'horizon' of the latest (and possible future) challenges to UK air power set against the need to retain a balanced and capable force and the financial constraints on public expenditure in this critical area of defence.

Conceptualising the Conceptual Component: One Airman's Perspective



By Group Captain Paul Wilkins MA RAF
Director of Defence Studies (RAF)

Introduction

*'Which of the two worlds do you inhabit as an individual and as a leader? Are you part of the new world, with your dreams and inspiration, or are you part of the old world, which is... being conquered and replaced even though you don't see it?'*¹

The Royal Air Force (RAF) is once more facing up to an old problem, one whose origin dates back to its genesis as the World's first independent air force - how to conceptualise what it is for and express this in terms of the role it will play in the Nation's future security, prosperity and growth. At the very core of this issue is the RAF's ability to leverage and exploit the Conceptual Component which, together with the Physical and Moral Components, forms the doctrinal basis of UK Fighting Power.² This issue is not unique to the RAF or the armed forces of the UK; indeed, it is arguably applicable to most Western militaries and has been a perennial issue since the beginning of the end of the Cold War in the late 1980s. However, the global financial crisis of 2008 and the sustained period of austerity that followed it have now brought the issue into a renewed and very sharp focus.

For the UK this is a particularly acute issue. The assumption is that the UK retains the desire to remain a strategic player on the World stage. William Hague, the then new Foreign Secretary writing in the Telegraph in 2010 set the current vector when he said 'we [UK] will maintain an active foreign policy, a global diplomatic network, and the ability to act to protect our interests with military force, preventing the shrinkage of Britain's influence.'³ This was codified in the National Security Strategy (NSS) of 2010: 'our national interest requires us to stand up for the values our country believes in - the rule of law, democracy, free speech, tolerance and human rights' which 'requires us to project power...maintain[ing] the capability to act well beyond our shores and work with our allies to have a strategic presence wherever we need it.'⁴ Putting aside debates on the validity of the NSS and Strategic Defence and Security Review (SDSR) of 2010 and the requirements of the next NSS/SDSR iteration, a new issue - proliferation of advanced technology - has added to the now omnipresent financial challenges faced by Western militaries. Latest UK Defence thinking suggests that 'globalisation of technology will lead to greater proliferation, as well as cost reductions for lower-end equipment, and this will allow a wider range of actors to access comparatively sophisticated weapons. The previous technological advantage enjoyed by Western militaries will continue to be reduced as a consequence of higher costs, in relation to procuring the latest and most capable systems.'⁵ These two issues therefore place a premium on the capacity of a Nation's armed forces to think very carefully how the military instrument can be configured and employed in support of political objectives. If it fails to think effectively, then aspirations to retain a comparative advantage over potential challengers will be lost and the ability to shape the outcome of UK policy goals along with it. The RAF (as should the Army and Royal Navy) must therefore constantly think hard about what it is for, not just what it does. For it is a requirement of some importance to the Nation's future security and defence - this then is the matter of the RAF's Conceptual Component (CC) of Fighting Power.

In the context of outlining his plans for the RAF's part in Future Force 2020, the Chief of the Air Staff (CAS) has stated that he wishes to 'put the Conceptual Component at the heart of the way we do things in order to deliver tangible improvements to the effectiveness, affordability and political value of UK air power, and inform choices for air power capability growth'.⁶ This implies that, in his view, the CC may not hold this position in today's RAF and, more significantly, if this is the case, then something should be done about it. The intention in this paper is to set the scene for the work ahead of the RAF and, by association, all those who contribute to the delivery of UK air power. It does not offer clear answers but it will propose a framework for thinking about the CC. First, it considers the issue in front of the RAF before proposing how it might begin to conceptualise the CC challenge and the factors which may form part of its solution. In doing so, it will also highlight the destructive potential of the many symptoms that must be managed while their causes are unravelled and treated. Ultimately, this *Editorial* provides an extended introduction for the articles that follow in this Conceptual Component-themed volume of *Air Power Review*. It is however just one airman's perspective - fellow airmen and women are invited to consider the points it makes, take a view and join the debate.

Is there a problem with the RAF's Conceptual Component?

It would appear that many in the RAF do not understand what the CC is or its relative importance in the contemporary context. Few airmen and women seem interested in learning about its significance and even fewer demonstrate any intent to act in its name. But this is exactly what the CAS requires his Air Force to now do, including all those who support it through the Whole Force approach.⁷ Even limited engagement with RAF students passing through the various command and staff courses at the UK's Defence Academy is quite revealing. Many believe that the CC does not apply to them suggesting it is the preserve of very senior officers or solely for those operating at the Operational and Strategic levels of war. Others claim to recognise its significance but believe they can do nothing about what they see as its current moribund status. Many RAF students apparently do not recognise their own contribution to the CC even as they make it. For example, developing new tactics, techniques and procedures, planning exercises, undertaking a *Continuous Improvement* event or submitting lessons are simply not recognised as being activity within the CC. The deduction is clear – the CC is neither recognised nor understood; it needs to be brought alive for UK airmen and women and its label – the CC – may even be part of the problem. In his excellent 2014 article *The Conceptual Component*, Air Vice-Marshal (Retd) Mike Harwood RAF – a former Director of the Higher Command and Staff Course – captured the essence of this issue perfectly stating: 'when the "Conceptual Component" is mentioned, clouds of inaccessibility usually gather'.⁸ This is a condition that needs to be addressed.

It would be reasonable to expect the answer to lie within doctrine, somewhat ironically itself one of the three doctrinal parts of the UK definition of the CC? A review of UK doctrine, however, simply adds to the perception that there is a deeper problem. The UK's highest level

doctrine states the aim of the Conceptual Component is to: 'provide the intellectual basis for our Armed Forces; theoretically justify providing and employing our Armed Forces; and preserve and take forward corporate memory, experience and knowledge.'⁹ So far so good but now things become less clear. When this doctrine unpacks the CC into its three elements of: the principles of war, doctrine and conceptual innovation, it does so in a markedly uneven way. For of the four pages allocated to this overall task, three articulate the principles of war in some detail, one-half of one page is utilised to explain the rationale for doctrine (this author accepts that the UK is quite adept at writing doctrine and takes it as being sufficient evidence of its perceived importance to the Armed Forces) but, crucially, there are just a few lines on the significance of conceptual innovation. In fact, there is arguably just one line that explains it: 'the Conceptual Component is also updated by conceptual innovation, capturing how our thinking changes over time in response to new technologies, structures and challenges.'¹⁰ Unfortunately the UK's senior air and space power doctrine offers little more with the same bias towards the principles of war although it does add a useful hint as to the CC's perceived importance: 'to use such sophisticated combat capabilities, potential adversaries would need to develop a supporting culture and philosophy. This originates within the conceptual component of fighting power, and ultimately depends on the quality of people. Given the likely constraints we face elsewhere, we must strive to gain and maintain an edge in the Conceptual Component.'¹¹ Any expansion on conceptual innovation, like its senior joint doctrine, is simply absent. This perhaps points to the nub of the issue and offers some explanation as to why many have difficulty in identifying with the CC. If our understanding of this aspect is so limited, indeed superficial, then logically it is here at this most fundamental level that we should start to address the problem. A simple test to confirm this would be to ask a colleague to name the three elements of the CC. In all likelihood, most would probably be able to name just one - doctrine. A few might add the principles of war although many will have thought it to be actually part of doctrine but only a small minority would name conceptual innovation. Yet in the context of the issue facing the RAF, this is arguably the most important of the three elements at this particular time thus, conceptual innovation is the point of departure.

Conceptual Innovation

The problem is simply this. In a future that is uncertain, that will change rapidly and where the RAF's comparative technical advantage is being eroded, conceptual innovation – the ability to do things differently and adapt to the environment – will be essential to the RAF's continued success. Similarly, if the RAF is to keep the Ends, Ways and Means in balance when the 'Means' are likely to shrink, but the 'Ends' unlikely to change, it will need to innovate and change its 'Ways'. So if UK air power is to remain credible, affordable and therefore relevant to the Nation, the RAF - as its custodian - must actively embrace and promote an innovation culture across its entirety. Indeed, this would appear to be fundamental to CAS' aiming point for the RAF of 2020 in his Command Plan: 'more than ever before, we need to think better and innovate more if we are to deliver our outputs in the most intelligent way.'¹² The big question of course is how to do that?

Some clues as to the likely way forward for the RAF lie within that same Plan where it is perceived that 'an increased focus on the CC will stimulate the innovation needed to ensure that air power remains effective, affordable and able to deliver the best value for money and return on investment.'¹³ The RAF Strategy for People reinforces this message: 'although we must continue to invest in advanced systems, people are and must remain at the centre of our capability... Our success depends on the people across the Whole Force...who, directly or indirectly, generate, operate and sustain air power. We must recruit, develop and retain people of the right quality across the Whole Force and nurture them in a meaningful way.'¹⁴ Furthermore, the CAS identifies there is a need to 'deliver the cultural shift to unlock the talent and potential of all our people...to enhance agility.'¹⁵

Others are thinking along similar lines. The Secretary of State for Defence, addressing the Institute for Government in early 2015, said: 'we recognised that...to provide the military capability our country needs it had to become more effective and efficient... Whether that means giving greater freedom to Service Chiefs to incentivise innovation and deliver the structures to achieve military results... Or whether ensuring we are focused on maximising our assets. The private sector pays interest on the capital it borrows to invest. That's a strong incentive not to hoard assets... For example, what's the right number of airfields?'¹⁶ This is an interesting question for those who operate aircraft or reside on airfields (with or without an active runway) but one which the CC can help to answer. Lord Levene said in his 3rd Annual Report on Defence Reform in late 2014: 'the challenge now is for Ministry of Defence to apply to the management of its people the same senior focus and all-round effort that has successfully transformed its financial position.'¹⁷ Describing the outcome of his Command Review in early 2015, the Chief of the General Staff (CGS) indicated that the British Army will 'make a structural and philosophical distinction between the requirement to construct strategy and plan future capability, and the delivery and execution of current capability'¹⁸, before going on to say that 'rigour and a "brains-based" approach will be at the heart of the General Staff's ethos.'¹⁹ In the USAF strategy document *America's Air Force: A Call to the Future*, General Mark Welsh III says: 'strengthening the Air Force culture requires capitalizing on the diversity that has made our service so successful, and the attributes that have drawn Americans to serve. Diversity of thought, enabled by an organization of innovative Airmen who represent and are valued for differing backgrounds, cultures, experiences, and highly-specialized competencies contribute to the greater agility we seek.'²⁰ Thus placing the CC at the centre of the RAF's business chimes with the thinking of the higher management of UK Defence, a sister Service and our principal Air Force partner. We can also deduce that an ability to innovate, the people who work in the organisation and the organisation's culture are key factors in the journey ahead for the RAF.

Innovation, People and Culture

A review of relevant literature suggests that the RAF is on the right track by focussing on these three areas as the way to develop its CC. Writing in 2001, Williamson Murray highlighted that 'technology has rarely been more than an enabler of revolutions in military affairs in the past,

and there is no reason to believe that things will be different in the future.'²¹ Murray adding that 'the emphasis...has been, more often than not, on technology and platforms, as embodying in themselves the necessary direction of innovation.'²² Air Vice-Marshal (Retd) Tony Mason RAF, writing in 1986, points out that 'sometimes the vision of the innovators has outrun the capability of technology (the early submariners, the early aircraft carrier advocates, etc)... Yet without such visionaries and without innovation, a nation's way of war becomes predictable; and predictable means vulnerable.'²³ But Mason also acknowledges the problems innovators face: 'such are the day-to-day pressures on the modern serviceman that he has little time either for reflection - the essential prerequisite for innovation - or even the time to develop the habits of reflection.'²⁴ Thomas Williams, citing Kanter, says 'something that is "innovative" involves highly problematic situations that cross organisational lines and threaten to disrupt existing arrangements. Such problematic situations require resources and skills beyond what we need to do our jobs.'²⁵ Williams also alerts us to the fact that the term innovator was a pejorative term in the late 18th Century before citing business guru Tom Peters: 'destruction and failure are essential to creativity and innovation' and 'innovation is frightening to many of us because it represents a loss of control and authority.'²⁶ Therefore being prepared to fail appears to be a prerequisite for innovation to occur.

Murray argues that 'there is another crucial element in the innovation equation - the culture of military organisations...The services that innovated with considerable success in the interwar period possessed internal cultures that encouraged debate, study, and honest experimentation in their preparations for war.'²⁷ The example Murray offers is von Seeckt's work with the German Army on manoeuvre warfare. He adds that 'exacerbating the problem of successful innovation over the past century has been the harsh reality that military organisations have rarely been willing to learn from the past' and 'the fact is that military organisations, for the most part, study what makes them feel comfortable about themselves, not the uncongenial lessons of past conflicts.'²⁸ These are strong views but Benjamin Kohlmann, a serving USMC officer, goes even further by suggesting that 'you can't innovate and have a long term impact if you are only surrounded by like-minded people. You must challenge closely-held assumptions daily if you want to have an impact. This...is anathema to a career military person.'²⁹ For Kohlmann the cause of this failure to innovate is down to an ineffective military education: 'a great deal of this lies in how we educate our military members. We educate them in the art of war, but do so with a focus on mere tactics. We educate them when they are well past the age of agile and innovative thought. We preach adaptability, flexibility and manoeuvre warfare, but only do so in relation to the movement of military kit.'³⁰ Peter Munson agrees, he argues that 'PME'³¹ does not provide students with radically different outsider perspectives' but he also notes that 'education and intellectual abilities are not valued.'³² He then suggests that it is the senior leadership who are the least well-equipped: 'the catch-22 is that military leaders have been trained and educated to take bold decisive action on the battlefield, but have been bred to be risk averse in the organisational environment.'³³ Mason however offers some balance when he says 'it should come as no surprise that military education can occasionally give rise to uneasiness within the military as a whole. There are many apparently

incompatible objectives: discipline and individuality, conformity and initiative, responding and innovating, determination and flexibility, imagination and objectivity, fire and dispassion. However, fighting and thinking should not be incompatible, but complementary.³⁴

The symptoms that emerge from the themes of innovation, people and culture are numerous. Overly bureaucratic processes, insufficient time to think, ineffective structures, out-of-touch leadership, poor decision-making mechanisms, an inability to learn lessons, an anti-intellectual bias and an organisational inertia which has a steadfast reluctance to challenge the status quo. But they must be recognised for what they are – symptoms – if their underlying causes, the true barriers to conceptual innovation, are to be addressed. Consequently, the RAF must hold a mirror up to itself and consider, honestly, if any of these symptoms are being reflected back. Clearly diagnosing their underlying condition(s) will be challenging. Instigation of any treatment can only be a leadership-led activity. This is what the RAF Command Plan 2014 hints at in the context of the upcoming SDSR: 'it is through objective and compelling evidence and analysis that we will inform a rational outcome for the RAF., in the best interests of Defence.³⁵ As Williams also points out: 'the successful organisation sets aside unchallenged assumptions, gut-based "facts", and sloppy reasoning, because they prevent objectivity and stifle learning. Learning organisations insist on fact-based decision-making, and insist on data and a careful examination of evidence to ensure the focus is on cause, not on the symptoms of the problem.'³⁶

A [Potential] Framework

What is the RAF trying to achieve? Arguably it needs to develop, or enhance, an attitude of mind which translates perceived ethereal conceptual thinking into relevant day-to-day RAF activity by all personnel who contribute to its outputs. If the Whole Force can conceptualise its challenges now and into the future, and then engage in loyal dissent within the organisation they will better understand their role, and thus make an enhanced contribution to the operational outputs of UK air power. This offers empowerment and will fuel true mission command. It will allow the Service to innovate whilst retaining the military hierarchy which ensures clear command and control in the battle-space and without stifling debate and progress in the business-space. The RAF has always considered itself to be a thinking Service, and rightly so. Now it has the opportunity to demonstrate that once more and lead the way in exploiting the CC thereby allowing it to bolster the Moral and, ultimately, exploit the Physical. The overall result will be more robust and relevant Fighting Power or, in the RAF's case, the lead element of UK air power. To start this analysis, it is proposed that the RAF considers how it might exploit the CC through three distinct but inevitably overlapping lenses of: education, enabling mechanisms and personnel management.

Education

There is perhaps a need to examine how we prepare our brightest and best – the few – for high command appointments in either the business or operations area of the Service. On the former, Lord Levene certainly thinks so. He suggested in his most recent report on

Defence Reform that '[MOD] should consider further changes to the way its people processes work at the very top... and to reinforce their standing as "Chief Executives", should all Service Chiefs (like Permanent Secretaries in future) be sent on stretching and highly intensive MBA training courses before taking up appointment?'³⁷ Munson concurs: 'Just as we learn on our tactical jobs, leaders need to be properly selected and educated for the far different challenges of organisational leadership and management at higher levels.'³⁸ In his recent book *High Command*, which considered UK political-military leadership over the Iraq and Afghanistan campaigns 2000-10, Major General (Retd) Christopher Elliott points out that 'all of the Chiefs of Defence Staff in the decade had escaped the formal intellectual training and broadening experience that a university offers – particularly in conceptual skills – yet they were dealing with their peers in Whitehall almost all of whom had been to university.'³⁹ He adds that only two had attended the Royal College of Defence Studies⁴⁰ and only one had attended the Higher Command and Staff Course⁴¹ before stating 'it would be fair to conclude that none of them had sufficient formal education for the job of leading UK defence forces and certainly none of them had formal training in strategy and statecraft.'⁴²

Considering the requirements of the operational space, Air Vice-Marshal Edward Stringer RAF, a former Assistant Chief of the Air Staff, makes a similar point about what he calls 'Air Generals', ie, those who lead the RAF on operations. He argued in 2014 that the unique demands of commanding air operations require an improved education and training focus for those destined to lead. Without it, Stringer suggests that 'there can be a tendency for them [Air Generals] to think like line mangers rather than air power strategists.'⁴³ Expanding, Stringer says 'an RAF commander may prioritise running his forces or his base as efficiently and effectively as possible, rather than viewing his aircraft and support staff as part of a larger, multifaceted organisation, with a wide spectrum of capabilities across a broad range of political utility.'⁴⁴ Murray seems to agree: 'It becomes increasingly easy, as the complexities, ambiguities, and frictions of combat recede into the past, for militaries to develop concepts, doctrines, and practises that meet the standards of peacetime efficiency rather than those of wartime effectiveness.'⁴⁵ One could imagine that a reinvigorated period of advanced wargaming might be one aspect the RAF will wish to consider as a result.

Overall, the volume and quality of education for RAF officers, particularly those in the Executive Stream⁴⁶ is considered to be high – the evidence would suggest that this should be preserved and perhaps even enhanced. Underpinned by the strong support of key leadership, the coordinated approach taken by the RAF to internal as well as external education programmes is arguably seen as best practice.⁴⁷ However, this may not in itself be sufficient as development of the CC for Main Stream officers and non-commissioned cadres is visibly less robust. Current data shows that only around 20% of RAF wing commanders progress to the Advanced Command and Staff Course, and that just 2% of this group will go onto complete the Higher Command and Staff Course.⁴⁸ Given that the Intermediate Command and Staff Course (Air) is targeted at newly-promoted squadron leaders, typically in their early 30s, this leaves a large body of the RAF's officer corps without a formal educational

intervention for around 20-23 years should they opt to serve until 55 years of age.⁴⁹ Thus gaining a better understanding of the educational requirements of this group and non-commissioned ranks – the many – while continuing to fine-tune those of the few, might be a good place for the RAF to start.

Enabling Mechanisms

‘It is up to us to create adaptable organisations that permit, encourage and oblige people to be agile rather than preclude them from being so.’⁵⁰ Yet despite RAF education programmes, the CC appears to be isolated from daily activity. Evidently doctrinal knowledge is also quite weak and as a result there is a general habit of relying on best effort rather than considered doctrinal application when delivering effects created by air power. This is neither a new phenomenon nor limited to the RAF. The Foreword to the Army Doctrine Primer 2011 helpfully points out that ‘much of our [UK] doctrine in the past has been good stuff and others have used it effectively, even if we have not. To quote Erwin Rommel: *The British write some of the best doctrine in the world; it is fortunate their officers do not read it* (emphasis in original).⁵¹ More pointedly it adds: ‘yet the very mention of the word doctrine sends some into toxic shock, and claiming not to have read it is a badge of honour amongst some older officers.’⁵²

The key questions are why does this perceived state of affairs continue to prevail, and what can be done about it? Herein lay the clues to address what this author has called the ‘enabling mechanisms.’ Could it be perhaps due to an ingrained ‘anti-intellectual bias’ in the British Military that we must seek to overcome? Colonel (Retd) Lloyd Matthews’ work analysing what he argues is an anti-intellectual bias in the US Army suggests that it has always been present in the British, French and US militaries. He starts by citing Prime Minister Lloyd George caustically observing that ‘military mind regards thinking as a form of mutiny’ and continues by citing a contemporary British commentator (unnamed) suggesting that ‘the legacy of the aristocratic or traditional [that is, anti-intellectual] role model is far from dead.’ This view of the British military may or may not be accurate but Matthews’ final conclusion does seem logical: ‘it is thus a fool’s game to squander precious intellectual capital... The army that rejects seminal thinkers, thereby depriving itself of innovative ideas and instruments for continuous intellectual self-renewal, will ultimately be a defeated army.’⁵⁵ Now therefore might be the time for a revolutionary approach to be adopted into the way the RAF conducts its business. Time for thinking⁵⁶ may need to be institutionalised and its output revered more. To do this, the conceptual process will need to be an invisible but engrained and therefore normal part of the RAF’s daily battle rhythm, and recognised and rewarded as such. In High Command, Elliott warns that Britain is destined for more military failure without reform of the chain of command. ‘At the moment the UK is bound to fall on its face unless someone makes an honest appreciation of what they want [armed] forces for... a coherent, thinking “brain” either does not exist in the MOD, or the circumstances of Whitehall do not allow it to flourish.’⁵⁷ Mason meanwhile cautions that ‘In our military hierarchies, the accumulation of experience and wisdom is associated with increasing seniority. Weight of opinion is usually accredited according to rank’ and that ‘the restless mind can make for an uncomfortable subordinate.

Paradoxically, the more powerful, competent, and confident the general, the more difficult it becomes to convince him that he may not be omniscient.⁵⁸ Kohlmann is typically more forthright: 'many of the "middle management" in today's [US] military are deeply disgruntled with the dysfunctional, if not toxic situations they find themselves in... When they do comment on their perception of the strategic, budgetary, acquisition and institutional failures of their organisation, they are patronisingly told that they do not understand the issues. Their concerns are dismissed, often with disdain, by the guardians of the institution.'⁵⁹ Mason is more subtle but makes the same point: 'If an innovation does come to mind and the service member proposes it as a change, the individual is then challenging the accepted wisdom, which, presumably, is either apparently working successfully or has catastrophically failed.'⁶⁰ Part of the answer might therefore lie in the RAF reviewing how it undertakes its conceptual thinking, who does it, in which fora and what its recognised outputs are. Another might be to consider how it could better institutionalise Red Teaming of new ideas.⁶¹

Personnel Management

'Military personnel policy is equal parts art and science. If it were all science...military services would have figured out long ago how to get the most out of each man and woman in uniform, give them rewarding careers, and win wars to boot'⁶², according to Mark Thompson of Time magazine. Arguably, this hits the proverbial nail on the head. The RAF, like the other Services, must compete in the employment market place to attract, recruit and retain sufficient 'talent' to meet the operational commitments it has today, and might have tomorrow. In this respect, it is of course arguably no different to any other enterprise, public or private. But recently that competition has become fiercer due to demographics reducing the size of the overall pool and an acute global shortage of STEM⁶³ graduates, the staple of a technology-based fighting force. Together, this is increasing the pressure on military personnel management. The macro answer for UK Defence is the Whole Force approach, described by Louth and Quentin of the Royal United Services Institute (RUSI) as 'the UK's reform of its military in which the armed forces change from being solely composed of a volunteer, professional army, navy and air force – wholly enwrapped within the governmental sector – to instead become a partnered arrangement of regular military, regular reserves, volunteer reserves, sponsored reserves and private sector contractors.'⁶⁴ The RAF's subordinate approach is contained in its *Strategy for People: Developing Human Capability* document. It articulates three separate but interdependent human capability goals of full manning, resilience and feeling valued, that it seeks to achieve. In amplifying, it states that 'to maximise the capabilities our people (uniformed and civilian) offer, we must bring together the right number of people, with the right skills, knowledge, experience and motivation, equipped appropriately to deliver our outputs.'⁶⁵ The key question in the context of the CC is what needs to change in personnel management, why and how might this be achieved?

A review of literature suggests there is a significant personnel issue with regards to the way the US military manages its talent today. The inference is that the RAF should check carefully if it too must identify and address similar symptoms and their causes. Tim Kane, a retired

USAF Colonel and author of *Bleeding Talent*, thinks that 'the personnel bureaucracy in the Pentagon is destroying the human capital invested in its troops, bleeding good people out into the civilian world but bleeding even more talent internally through mismanagement.'⁶⁶ Nick Taranto, a CEO and USMC reserve officer, agrees with Kane's view but focuses on what he regards as a failed rewards mechanism, saying 'it's easy to believe that top performers, as in many other industries, are lured away by bigger paychecks. But it's not so simple. The reason overwhelmingly cited by veterans and active-duty officers alike is that the military personnel system is nearly blind to merit. Fitness Reports, the military equivalent of performance evaluations, punish mistakes and reward risk aversion.' Taranto goes on to say that 'retaining the best talent is not all about money. The brightest most innovative people need to be challenged. They need to feel incentivized to work hard. And they need to know that their hard work is recognized, appreciated, and rewarded.'⁶⁷ Munson also suggests that 'a military that needs agility and cultural change would be well served to bring some flexibility into its personnel policies, recognising that some people will internalise more experience in 15 years than others would in 30.'⁶⁸ Some might regard these comments as being too harsh but the spirit of their main message is reflected in recent comments by Ashton Carter, the new US Secretary of Defence. Speaking to his High School alma mater about his plans for the [US] 'force of the future', he said: 'the demands of the 21st Century may require the military to fundamentally change the way it evaluates, promotes and retains service members.'⁶⁹ Carter expands by saying that 'promotion boards should give less weight to seniority and place more emphasis on merit', suggesting '[the US] military should allow well-trained people to begin military service in the middle of their career and grant them an automatic mid-career rank', and that 'retaining the best... will require flexible career paths' including the option for them to take a 'sabbatical... [in order to] get a degree, learn a new skill or start a family.'⁷⁰ Critically, he recognises that, aside from the obvious attracting and retaining talent benefits such an approach brings, that it is also good for the US military because 'they help people bring new skills from outside back into the military.'⁷¹

Somewhat encouragingly, the RAF appears to also recognise these challenges and hints at some of their potential solutions in its *Strategy for People*: 'embracing new equipment types and new roles, such as Lightning II, Remotely-Piloted Air Systems and Cyber will demand new skills, organisational structures and specialisations' and 'we must explore opportunities to allow more flexible employment of personnel across Branch and Trade boundaries and to move - in both directions - between Regular and Reserve services.'⁷² The Strategy also says the RAF will 'make better use of its talent by employing personnel more flexibly, and developing them more robustly, across career fields.'⁷³ The CGS has a similar view. When discussing the outcome of his Command Review he said: 'the work to broaden and lengthen the career structure to maximize talent through diversity is to be incorporated.'⁷⁴ Kane is more specific in his view of the US military, suggesting three priorities: decentralising personnel management and giving commanders the authority to hire; instituting a more honest system of performance evaluations; and, introduction of lateral entry where former officers (and presumably airmen) exit and re-enter and re-exit and re-enter, and to serve as

long a career as they want without career-tenure constraints.⁷⁵ Taranto is also specific, likening the US military's personnel challenges to those of any start-up enterprise: 'we are building management systems that retain the best people by emphasizing merit-based pay, robust mentorship networks, and boundless respect for exceptional talent. We also make sure to separate the wheat from the chaff, and when people aren't performing, or aren't willing to take risks, we quickly show them the door.'⁷⁶

The RAF can obviously see the challenge ahead of it. However, its ability to deliver effective RAF personnel management change will, in part, inevitably determine the extent to which it can embed the CC at its very core and thus enhance its future Fighting Power. The RAF will obviously be best served if it has sufficient access to the best talent, but so too will many others. Thus developing new personnel management policies and their supporting structures, introducing flexible appointment processes and practises, and identifying innovative reward mechanisms would all appear to be fundamental to achievement of the CAS' CC ambition. The obvious deduction here is that the RAF is operating in a contested environment in this regard and must therefore derive its own competitive advantage if it is to be successful in the longer term.

Conclusion

Analysis of future strategic trends has identified a macro problem for Western militaries – the technological edge that has traditionally provided their comparative advantage is beginning to erode and is forecast to continue to do so. The RAF is not immune, a fact recognised by the CAS who appears intent on doing something about it. His plan is to further develop the intellectual professional foundations of UK air power – doctrinally known as the Conceptual Component of the RAF's fighting power. This way the RAF might offset both the reducing mass and increasing proliferation of technology, which is shrinking the strength of its Physical Component. The RAF's twin goals are therefore to think more and innovate better, everywhere across its organisation; its prize to make UK air power more effective, affordable and relevant to the Nation. But there is a problem. The Conceptual Component is apparently not well understood by its airmen and women and hence it will be difficult for the RAF to develop something it does not really know. Doctrine does not really help in this regard despite itself, ironically, being one of the elements of the Conceptual Component, with the element of conceptual innovation particularly poorly articulated in current doctrine publications. Therefore, the RAF's problem in outline appears to be a need to understand the status of its Conceptual Component today, define where it needs it to be in the future and then plot a course to get there. These are the implied tasks set by the CAS in the *RAF Command Plan 2014*.

The RAF is not alone in thinking this way. A literature review identifies many others from its sister Services, partner Air Forces, Government and commercial enterprises doing the same. Their collective wisdom however does offer plenty of advice. A plethora of symptoms are clearly identified which the RAF must now carefully seek out in a ruthless process of

self-examination. Just as with the practice of medicine, the challenge is to then accurately identify their underlying root causes and ultimately prescribe a viable treatment plan to remedy them. The literature suggests that the RAF would be well advised to closely examine three interconnected areas of the organisation as it goes about its work to embed the Conceptual Component. First, it should check its ability to innovate across all levels of the RAF. Next, it should consider the people in the organisation: are they what the RAF needs for today and tomorrow? How can it attract and retain the best talent? Finally, it should consider the RAF's culture within which those people are serving: are its behaviours rewarding innovation or punishing it? Do the RAF's structures promote innovation from its Whole Force or do they contrive to make it a near impossible condition beyond Tactical-level warfighting? These are tough, challenging questions for which the CAS seems determined to demand thoughtful answers.

This paper does not give firm answers to these questions but it does offer an embryonic framework through which they might be considered and its supporting analysis deciphered into a basic understanding. This framework comprises three parts: education, enabling mechanisms and personnel management. Like the factors mentioned in the previous paragraph, each are connected and offer mutually supporting and beneficial outcomes. Inevitably, the three parts are unlikely to be exhaustive but arguably they do represent a reasonable starting point from which to consider the problem. Education is perhaps an obvious and direct first step but it is its nuanced application that must be holistically considered. How to best prepare leadership for the battlefield and the boardroom? How to offer sufficient to the many, while nurturing the few? What education to offer, when, to whom and how might this change over time? Enabling mechanisms on the other hand are more of a wrap-around, slightly less direct part of the framework. Is the organisation truly adaptable or are there barriers that must first be removed? Does leadership actively promote the Conceptual Component, encourage innovation without punishing honest failure? Does every level of the organisation value creative challenge, make sufficient time for thinking and then recognise and reward the development of new ideas? The final part of the framework is personnel management, a largely indirect influence on the Conceptual Component but arguably its most significant. Indeed, if this is deemed not fit for purpose then changes in the other two parts of the framework alone will only yield low-benefit, window-dressing improvements. The RAF's *Strategy for People: Delivering Human Capability* appears to be asking all the right questions of the Service and even identifying potential innovative solutions to be pursued. Indeed, it is just possible that it is this area that will 'deliver the cultural shift to unlock the talent and potential of all of our people'⁷⁷ that is demanded by the CAS. It would seem beyond any doubt that the Conceptual Component will benefit tremendously if it does.

Conceptualising the Conceptual Component highlights that the challenge facing the RAF is fundamentally about thinking better about what you've done, what you're doing and what you might have to do. And this must take place across many levels simultaneously

throughout the Service and involve the Whole Force. People are indeed at the centre of UK air power capability and in seeking to embed the Conceptual Component at the centre of the RAF of 2020 this is recognised by the CAS and he is actively pursuing this ambition. The views offered here is just one airman's perspective. The author, and Editor *Air Power Review*, now invites the airmen and women of the RAF and other air forces, and beyond, to put digital pen to paper and share their thoughts on the Conceptual Component with the RAF Centre for Air Power Studies. This is important work for as Mason and Welsh III both remind us, we would be well-advised to heed the advice of General Hap Arnold USAF just after the conclusion of the Second World War:

*'National safety would be endangered by an air force whose doctrines and techniques are tied solely to the equipment and processes of the moment. Present equipment is but a step in progress, and any air force which does not keep its doctrines ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security.'*⁷⁸

Notes

¹ Wilkinson D J *"The Ambiguity Advantage: What Great Leaders Are Great At"* (Palgrave Macmillan: Basingstoke, 2006) p3

² JDP 01-1, *British Defence Doctrine (Fifth Edition) (MOD: 2014)*. p25.

³ <http://www.telegraph.co.uk/news/politics/william-hague/8036093/Strategic-Defence-and-Security-Review-We-have-a-clear-vision-of-Britains-role-in-the-world.html> accessed 1 Apr 15.

⁴ *A Strong Britain in an Age of Uncertainty: The National Security Strategy (MOD: 2010)*. p4.

⁵ DCDC, *Future Operating Environment 2035 (MOD: 2015)*. p3.

⁶ *RAF Command Plan Part 1A, (MOD: 2014)*. p2.

⁷ The Whole Force comprises Regulars, Reserves, Civil Servants and Contractors.

⁸ Harwood, Mike AVM (Retd) RAF. *The Conceptual Component (Air Power 2014/15) (MOD: 2014)*. p18.

⁹ JDP 01-1, *British Defence Doctrine (Fifth Edition) (MOD: 2014)*. p28.

¹⁰ *Ibid.* p32.

¹¹ *Joint Doctrine Publication 0-30, UK Air and Space Doctrine (MOD: 2013)*. p2-5.

¹² *RAF Command Plan Part 1A, (MOD: 2014)*. p2.

¹³ *Ibid.* p3

¹⁴ *RAF Strategy for People: A Strategy for Delivering Human Capability (MOD: 2014)*. p4.

¹⁵ *RAF Command Plan Part 1A, (MOD: 2014)*. p3.

¹⁶ <https://www.gov.uk/government/speeches/reforming-defence-keeping-fighting-fit> accessed 30 Mar 15.

¹⁷ <https://www.gov.uk/government/publications/defence-reform-an-independent-report-into-the-structure-and-management-of-the-ministry-of-defence--2> accessed 30 Mar 15.

¹⁸ Carter, Nick General. *Army Command Review (GS/02/01/13 dated 26 Jan 15)*. p1.

¹⁹ *Ibid.* p5.

- ²⁰ Welsh III, Mark General USAF Chief of Staff. *America's Air Force: A Call to the Future* (US DoD: 2014). p12.
- ²¹ Murray, Williamson. *Thinking About Innovation* (Naval War College Review, Spring 2001, Vol LIV, No 2). p120.
- ²² Ibid. p127.
- ²³ Mason, Tony AVM (Retd) RAF. *Innovation and the Military Mind* (Air University Review, Jan-Feb 1986). <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1986/jan-feb/mason.html> accessed 12 Jan 15.
- ²⁴ Ibid.
- ²⁵ Williams, Thomas M. *Understanding Innovation* (Military Review, July-August 2009). p124.
- ²⁶ Ibid.
- ²⁷ Murray, Williamson. *Thinking About Innovation* (Naval War College Review, Spring 2001, Vol LIV, No 2). p124.
- ²⁸ Ibid. p122.
- ²⁹ Kohlmann, Benjamin. *The Military Needs More Disruptive Thinkers* (Small Wars Journal blog, 5 April 2012) <http://smallwarsjournal.com/jrnl/art/the-military-needs-more-disruptive-thinkers> accessed 30 Mar 15.
- ³⁰ Ibid.
- ³¹ Professional Military Education (PME) is the overarching US term which describes the education programmes of its armed forces.
- ³² Munson, Peter J. *Disruptive Thinkers: Defining the Problem* (Small Wars Journal blog, 9 April 2012). <http://smallwarsjournal.com/jrnl/art/disruptive-thinkers-defining-the-problem> accessed 30 Mar 15.
- ³³ Ibid.
- ³⁴ Mason, Tony AVM (Retd) RAF. *Innovation and the Military Mind* (Air University Review, Jan-Feb 1986). <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1986/jan-feb/mason.html> accessed 12 Jan 15.
- ³⁵ *RAF Command Plan Part 1A*, (MOD: 2014). p2.
- ³⁶ Williams, Thomas M. *Understanding Innovation* (Military Review, July-August 2009). p66.
- ³⁷ <https://www.gov.uk/government/publications/defence-reform-an-independent-report-into-the-structure-and-management-of-the-ministry-of-defence--2> accessed 30 Mar 15.
- ³⁸ Munson, Peter J. *Disruptive Thinkers: Defining the Problem* (Small Wars Journal blog, 9 April 2012). <http://smallwarsjournal.com/jrnl/art/disruptive-thinkers-defining-the-problem> accessed 30 Mar 15.
- ³⁹ Elliot, Christopher L Major-General (Retd). *High Command* (C Hurst & Co (Publishers): 2015). p201.
- ⁴⁰ Admiral Sir Michael Boyce RN and Air Chief Marshal Sir Jock Stirrup RAF.
- ⁴¹ Air Chief Marshal Sir Jock Stirrup RAF.
- ⁴² Elliot, Christopher L Major-General (Retd). *High Command* (C Hurst & Co (Publishers): 2015). p201.
- ⁴³ Stringer, Edward J AVM RAF. *Air Generalship* (Air Power 2014/15) (MOD 2014) p20.
- ⁴⁴ Ibid.
- ⁴⁵ Murray, Williamson. *Thinking About Innovation* (Naval War College Review, Spring 2001, Vol LIV, No 2).

⁴⁶ The RAF defines its officer corps as existing in one of 2 self-explanatory groups: the Executive or Main Stream; all officers start out in the former but most end up in the latter as their career unfolds.

⁴⁷ For example, the First Sea Lord launched his own Fellowship Scheme in December 2014 based on the Royal Navy's positive view of the Chief of the Air Staff's Fellowship Scheme, which has been running successfully since 2006.

⁴⁸ This data is drawn from an ongoing piece of work by Director RAF Division within the Joint Services Command and Staff College to inform future RAF education requirements.

⁴⁹ The introduction of the New Employment Model (NEM) on 1 Apr 15 will only exacerbate this situation as many officers will be given the opportunity to serve until 60 years of age, thus potentially increasing this educational hiatus to a period of 25-28 years, a period representing approximately 60% of their potential active service life.

⁵⁰ Dye Peter, *Developing Agile Airmen*, in Ed Parton N, *Air Power: The Agile Airforce*, CAS' Air Power Conference 2006 (RAF: 2006) p16.

⁵¹ *Army Doctrine Publication: Army Doctrine Primer (AC7194)*. (MOD: 2011). p(i).

⁵² Ibid.

⁵³ Matthews, Lloyd J Colonel US Army (Retd). *The Uniformed Intellectual And His Place in American Arms (Part I)*, (ARMY: July 2002). p18. http://www.ausa.org/publications/armymagazine/archive/2002/7/Documents/Matthews_0702.pdf accessed 31 Mar 15.

⁵⁴ Ibid.

⁵⁵ Matthews, Lloyd J Colonel US Army (Retd). *The Uniformed Intellectual And His Place in American Arms (Part II: The Effects of Anti-intellectualism On the Army Profession Today)*, (ARMY: August 2002). p40.

⁵⁶ Google advocates that 20% of an employee's time should be devoted to thinking. E Hayes Google's 20% factor, ABC News May 12 2008. <http://abcnews.go.com/technology/story?id=4839327> accessed 30 Mar 15.

⁵⁷ Elliot, Christopher L Major-General (Retd). High Command (C Hurst & Co (Publishers): 2015). Comments contained in the author's interview with the Times newspaper 1 Jan 15. <http://www.thetimes.co.uk/tto/news/uk/defence/article4311018.ece> accessed 5 Jan 15.

⁵⁸ Mason, Tony AVM (Retd) RAF. *Innovation and the Military Mind (Air University Review, Jan-Feb 1986)*. <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1986/jan-feb/mason.html> accessed 12 Jan 15.

⁵⁹ Kohlmann, Benjamin. *The Military Needs More Disruptive Thinkers (Small Wars Journal blog, 5 April 2012)*. <http://smallwarsjournal.com/jrnl/art/the-military-needs-more-disruptive-thinkers> accessed 30 Mar 15.

⁶⁰ Mason, Tony AVM (Retd) RAF. *Innovation and the Military Mind (Air University Review, Jan-Feb 1986)*. <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1986/jan-feb/mason.html> accessed 12 Jan 15.

⁶¹ Airmen in the Development, Concepts and Doctrine Centre, Air Warfare Centre, Air Capability, Air Staff and CAS' Fellows carry out think tank-type activity.

⁶² <http://nation.time.com/2013/01/21/why-cant-the-u-s-military-grow-better-leaders/> accessed 29 Mar 15.

⁶³ Refers to graduates with a Science, Technology, Engineering or Mathematics (STEM) background.

⁶⁴ Louth, John and Quentin, Pete. *Making the Whole Force Concept a Reality (RUSI Briefing Paper, 2014)*. p1.

⁶⁵ *RAF Strategy for People: A Strategy for Delivering Human Capability (MOD: 2014)*. p8.

⁶⁶ <http://nation.time.com/2013/01/21/why-cant-the-u-s-military-grow-better-leaders/> accessed 29 Mar 15. Mark Thompson of Time magazine was interviewing Tom Kane (a retired USAF officer) on the release of his new book *Bleeding Talent: How the U.S. Military Mismanages Great Leaders and Why It's Time for a Revolution*.

⁶⁷ <http://www.forbes.com/sites/nicktaranto/2013/11/11/the-military-needs-to-learn-people-management-lessons-from-startups/> accessed 29 Mar 15.

⁶⁸ Munson, Peter J. *Disruptive Thinkers: Defining the Problem (Small Wars Journal blog, 9 April 2012)*. <http://smallwarsjournal.com/jrnl/art/disruptive-thinkers-defining-the-problem> accessed 30 Mar 15.

⁶⁹ <http://www.militarytimes.com/story/military/pentagon/2015/03/30/secdef-promotion/70667178/> accessed 31 Mar 15.

⁷⁰ Ibid.

⁷¹ Ibid.

⁷² *RAF Strategy for People: A Strategy for Delivering Human Capability (MOD: 2014)*. p7.

⁷³ Ibid. p10.

⁷⁴ Carter, Nick General, Chief of the General Staff. *Army Command Review (GS/02/01/13 dated 26 Jan 15)*. p6.

⁷⁵ <http://nation.time.com/2013/01/21/why-cant-the-u-s-military-grow-better-leaders/> accessed 29 Mar 15. Mark Thompson of Time magazine was interviewing Tom Kane (a retired USAF Officer) on the release of his new book *Bleeding Talent: How the U.S. Military Mismanages Great Leaders and Why It's Time for a Revolution*.

⁷⁶ <http://www.forbes.com/sites/nicktaranto/2013/11/11/the-military-needs-to-learn-people-management-lessons-from-startups/> accessed 29 Mar 15.

⁷⁷ *RAF Command Plan Part 1A, (MOD: 2014)*. p3.

⁷⁸ Cited in Mason, Tony AVM (Retd) RAF. *Innovation and the Military Mind (Air University Review, Jan-Feb 1986)*. <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1986/jan-feb/mason.html> accessed 12 Jan 15. See also Welsh III, Mark General USAF Chief of Staff. *America's Air Force: A Call to the Future (US DoD: 2014)*. p6.

Notes on Contributors

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Group Captain Paul O'Neill is a serving RAF Personnel Officer. He completed a MPhil at the University of Cambridge in 2009 and is currently a visiting Research Fellow at the University of Oxford, as part of the Changing Character of War Programme where he is researching organisational agility as a CAS' Fellow. He is a Chartered Fellow of the Chartered Institute of Personnel and Development (CIPD) and is a member of the CIPD HR Leaders' Forum.

Dr Matthew Powell holds a PhD in Modern History from the University of Birmingham. His thesis investigates the development of tactical air power by the RAF during the First World War and inter-war period and the RAF's Army Co-operation Command development of tactical air power thinking and application in Britain between 1940 and 1943. He holds a degree in Contemporary Military and International History and a Masters degree in Intelligence and Security Studies both from the University of Salford and is a teaching associate at the University of Birmingham.

Air Vice-Marshal Andrew Turner was commissioned into the Royal Air Force in 1985. He is currently AOC 22 (Trg) Group and COS (Trg) at HQ Air Command. He was educated at Kingswood School in Bath, the RAF Colleges Cranwell and Bracknell, the Indian Staff College, the UK Higher Command and Staff College, the Royal College of Defence Studies and the UK Pinnacle and US Capstone courses. He has studied at Oxford, Exeter, King's College London, Chennai and the Open Universities earning Masters in International Relations and Strategic Studies and a Bachelor's degree in Oceanography and Cosmology. A helicopter pilot with 5000 flying hours, he has flown 1850 of those on 19 operational tours in Northern Ireland, Central America, Saudi Arabia, Iraq, Kuwait, Bosnia, Kosovo, Albania and Afghanistan. He has commanded 28 (AC) Sqn, RAF Odiham, the UK Merlin and UK Chinook Forces, the Special Forces Aviation Wing, the Puma Force in Kosovo, Merlin Force in Iraq and the Chinook, Apache, Lynx and Sea King Forces in Afghanistan. Para trained he has completed staff appointments in the UK MOD in planning, operations and media directorates, PJHQ as

the head of military planning, Washington as CDS' Liaison Officer and in brigade, division and corps headquarters. He was appointed as an Officer in the Most Excellent Order of the British Empire (OBE) in the 2006 Birthday Honours "in recognition of distinguished services in the Ministry of Defence in support of operations in Afghanistan, Iraq and in home waters". He was promoted to Commander within the Order of the British Empire (CBE) in the 2010 Birthday Honours "in recognition of distinguished and gallant service in command of RAF Odiham and in Afghanistan during the period 21 November 2007 to 22 November 2009". Married to Catherine with 2 sons, Richard (22) and Benedict (19), Turner lives near Henley-on-Thames and is not responsible for two Jack Russell terriers. He enjoys rowing, riding, watching rugby and occasionally playing polo and skiing badly.

Squadron Leader Paul Withers joined the RAF in 1987 as an Electronics Technician (Telecommunications) and completed a number of tours in the UK and Germany before commissioning into the Engineer Branch in 2006. A Communications Electronics specialist, Withers completed Junior Officer tours at the Tactical Imagery-Intelligence Wing (TIW) at RAF Marham, Joint Service Signals Unit at Digby and 90 Signals Unit at RAF Leeming. He was promoted to Squadron Leader in February 2012 and took up a new post as the SO2 J5 in the Joint Cyber Unit (Cheltenham). This tour was followed by a deployment to Afghanistan, working as a cyber operations planner within the US Cyber Command Expeditionary Cyber Support Element in Kabul. He returned to RAF Marham in September 2014, when he took up his current post as the TIW Senior Engineering Officer. Withers holds BSc(Hons) degrees in Information Technology and Computing, and Engineering Management. In 2011, he was selected for a Dowding Fellowship and graduated in 2014 with the MA *Air Power in the Modern World* from King's College London. In November 2014, Withers was awarded the Lawrence Freedman Award for his MA Dissertation '*What is the Utility of the Fifth Domain?*', which has been adapted for publication in this issue of Air Power Review.

Revitalising the Conceptual Component: Addressing Britain's Future Strategic Challenges

By Lieutenant Colonel Dan Brown

With the end of British combat operations in Afghanistan and an imminent SDSR, it is time for the MOD to critically analyze how it develops and maintains the conceptual component of fighting power. Budget cuts, hugely expensive acquisitions and a political thirst for overseas operations have left the military in the unenviable position of justifying how it grows the collective intelligence of the Armed Forces. Consequently, the first half of this work examines the evolution of the conceptual component, and how modern British doctrine serves to undermine its own credibility through ambiguous claims regarding its purpose. The second half focuses on critical thinking and how its inclusion into a redefined and repositioned conceptual component is a necessary first step in the process of preparing the Armed Forces an uncertain budgetary and operational future.

Introduction

As British Forces recover from their withdrawal from Afghanistan, there is a very real possibility that military thinking has reached a zenith until it is once again spurred by the demands of war. Arduous campaigns stimulate innovative thinking across a wide range of fields. Advances in tactics, medicine, computers, logistics and a nearly limitless list of technologies and practices find their origins in the realm of military necessity. In the absence of war or existential threat, a familiar and tired cycle is oft repeated: fleeting national euphoria (or relief) over the cessation of hostilities gives way to an underlying national fatigue, leading to decreased military budgets and manpower. Defence is then asked to prepare for a broad set of future contingencies with less resource, an imbalance that leaves the military unable to replicate the depth of thinking and pace of innovation it so recently enjoyed. Without this focused thinking, the military struggles to “do more with less”, which usually translates into “less with less” until some military contingency or crisis forces the system to adjust accordingly, usually at great cost.

Today, the British Armed Forces are dealing with a particularly onerous version of this cycle, where national fatigue and subsequent budget cuts have preceded the decrease in operational demands. Under these financial pressures, the MOD chose to reduce spending in a number of personnel-related areas in order to preserve expensive and politically volatile acquisitions projects. General Sir Nicholas Houghton, Chief of the Defence Staff warned of the potential consequences of this action in his speech to RUSI in December of 2013. ‘Unattended our current course leads to a strategically incoherent force structure: exquisite equipment, but insufficient resources to man that equipment or train on it.’¹ Cutbacks in personnel do not relieve the Armed Forces of its responsibilities, so individuals are left with less time to hone the improvement of their knowledge and thinking; what doctrine labels the “conceptual component of fighting power”.² To spur the development of the conceptual component within the forces, military professionals must be encouraged to *think about thinking*; to have *ideas about ideas*. Unfortunately, without institutional support, the pace of life for the average military member leaves little time for careful thought and reflection on subjects beyond their primary duty, as put by General David Petraeus. ‘[M]ilitary professionals often live a cloistered existence that limits what we experience first hand...we have our noses to the grindstone, which tends to make us unaware of what we’re missing. We don’t pause and look up often enough, because we don’t have the time.’³ Building the necessary time and space for this reflection is the responsibility of all service members, but especially those chosen to lead in an increasingly complex global environment where political decisions and 24-hour news cycles often outstrip the ability of militaries to adequately plan for operations.

Facing the simultaneous challenges of significant structural change, the end of operations in Afghanistan and a Strategic Defence and Security Review in 2015, the Armed Forces must enter into an intellectually honest and open debate regarding the importance of the conceptual component and the essential role the military must play in infusing reason into the decision-making process of the government. This dialogue is already overdue, as *Joint Doctrine*

Publication 0-30, the newly released *United Kingdom Air and Space Doctrine*, acknowledges the need for change, stating, 'we must grow the conceptual component ('how we fight') to compensate for shortfalls in the physical component ('what we fight with').'⁴ What follows is therefore the opening argument in this debate, in the form of a proposed transformation in how defence approaches conceptual knowledge and critical thinking. Consequently, the first half of this work examines the evolution of the conceptual component, and how the current iteration of British doctrine serves to undermine its credibility through ambiguous claims regarding its purpose. Rather than making a case for the significance of knowledge and learning, the doctrine's failings reveal a pressing need to adjust the way defence articulates conceptual matters. The second half focuses on critical thinking and how its inclusion into a redefined and repositioned conceptual component is a necessary first step in the process of preparing the Armed Forces for its uncertain future.

The Evolution of Fighting Power

Joint Doctrine Publication 0-01 (JDP 0-01) *British Defence Doctrine* (BDD) is the capstone doctrine document of the UK Armed Forces.⁵ This volume is designed to serve as a guide for all subordinate UK military publications, detailing the 'broad philosophy and principles underpinning the employment of the Armed Forces.'⁶ Chapter 4 of BDD is titled 'Fighting Power', a term which 'defines the Armed Forces' ability to fight'.⁷ Fighting power is divided into three components, including a 'conceptual component (the thought process), a moral component (the ability to get people to fight) and a physical component (the means to fight).'⁸ As this article will propose a new construct for both the conceptual component itself and in its philosophical relationship to the other components, it is necessary to first understand its meaning, inception and evolution.

Defined as the 'coherent intellectual basis and theoretical justification for the provision and employment of Armed Forces', the conceptual component is comprised of three elements, the Principles of war, doctrine and conceptual innovation.⁹ Principles of war 'guide commanders and their staffs in the planning and conduct of warfare. They are enduring, but not immutable, absolute or prescriptive, and provide an appropriate foundation for all military activity.'¹⁰ In both NATO and UK military parlance, doctrine is '[f]undamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgement in application.'¹¹ The third pillar of the conceptual component, conceptual innovation is defined as how military thinking evolves over time, resulting in the development new tactics, procedures, structures and capabilities.¹² Together, these three components offer an avenue to maintain corporate memory and a framework to critically analyze how the military conducts itself across all of its diverse functions. Whilst militaries have sought to improve themselves in these terms for millennia, the formalisation of the conceptual component in British doctrine is a relatively recent phenomenon.

In 1989, under the authorisation of the Chief of the General Staff, the British Army released *Design for Military Operations: The British Military Doctrine* (BMD).¹³ This short pamphlet was

designed to provide a 'better understanding of what is required of the Army and how it will operate' and was issued to all Army officers above the rank of lieutenant.¹⁴ Included in BMD was the first description of 'fighting power', which consisted of the same three elements as it does today, but only due to the influence of one of Britain's most accomplished military thinkers.

After the select team of two officers largely responsible for writing BMD had solicited inputs from across the Army and briefed a range of Brigadiers and Generals, they travelled to Oxford to brief Professor Sir Michael Howard, who would prove to be their sternest test.¹⁵ Upon hearing the brief, including the description of fighting power as consisting of just two components, a moral and a physical, the Professor dismissed the team 'rather like undergraduates at the end of a seminar'.¹⁶ Days later, a letter from Professor Howard arrived, proposing a third, 'intellectual' component, which was subsequently adapted and renamed

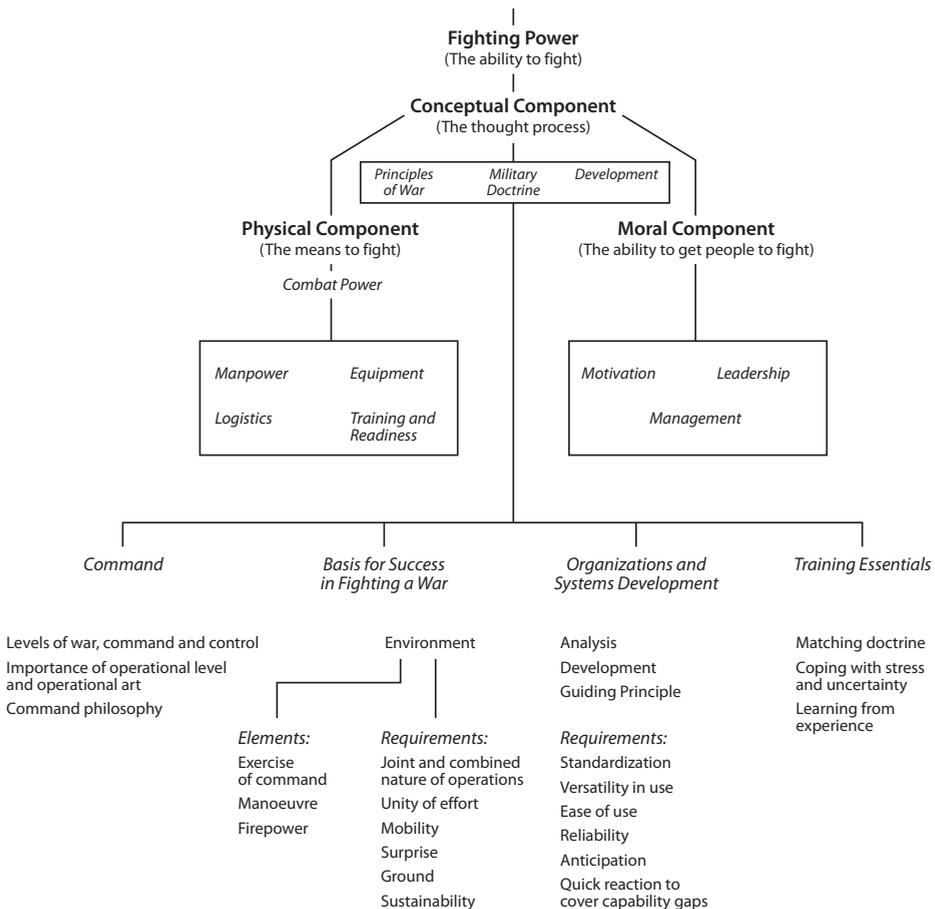


Fig 1. The Components of Fighting Power, British Military Doctrine, 1989

the 'conceptual' component to avoid alienating officers who might have rejected an overly academic approach to warfare.¹⁷ The team instantly realised the importance of capturing 'the thought process' in a separate component, and placed the conceptual component at the top of its diagram of fighting power.¹⁸ Unfortunately, this promising beginning has given way to a slightly muddled view of the conceptual component today, as evidenced by the current British doctrine.

The Failings of British Doctrine?

In its Foreword, BDD includes two statements designed to outline its importance and purpose. The first is an original, though not unique, claim regarding British doctrine: 'Far from replacing individual initiative, doctrine is said to guide commanders and subordinates how to think and not what to think.'¹⁹ Second, is an oft-used (or possibly misused) quote from *On War*, in which Clausewitz describes theory as 'a guide to anyone who wants to learn about war from books; it will light his way, ease his progress, train his judgement and help him to avoid pitfalls... [doctrine] is meant to educate the mind of the future commander... not to accompany him to the battlefield.'²⁰ What is troubling about these assertions is the message they send regarding military thinking, given BDD's preeminent place in the MOD's doctrinal hierarchy. Specifically, these statements reflect a mindset that is all too pervasive in British military circles. Collectively, the MOD publicly touts the merits of the conceptual component and its major subset of military doctrine, but due to its overstretched resources and manpower its actions in supporting these essential elements often fail to live up to the rhetoric.

A military deficient in the conceptual component will not realise its full potential, as a force 'derives its effectiveness from harmonising all 3 components of Fighting Power.'²¹ Conceptual ineptitude manifests itself in a variety of ways, but is clearly evident in the crafting of military strategy, the 'alignment' of *ends*, *ways* and *means*.²² Colin Gray reminds strategists that this relationship between ends, ways, and means is a 'complex balance of relative weight' which 'will vary hugely from occasion to occasion.'²³ These variations are clear, as military strategy is used not only in response to fast-moving crisis situations, but also in long-term contingency planning and procurement. Both Gray and Clausewitz would likely take issue with calling the latter concept 'strategy' as they define it much more narrowly. For Gray, military strategy is 'the direction and use that is made of force and the threat of force for the ends of policy.'²⁴ This definition is a hybrid of two statements from *On War*. In the first, Clausewitz differentiates between tactics and strategy. '[T]actics teaches *the use of the armed forces in engagement*; strategy, *the use of engagements for the object of the war*.'²⁵ The second ties war to policy. 'The political object is the goal, war is the means of reaching it.'²⁶ Wartime strategy is essential, but militaries cannot afford to only think strategically whilst embroiled in conflict, as put by Michael Handel. '[S]trategy is the development and use of all resources in peace and war in support of national policies to secure victory.'²⁷ Leaders and commanders must understand and employ strategic thinking to ensure the Armed Forces are prepared for the next contingency. What is hugely important with respect to the conceptual component is the truth that doctrine and concepts must inform decisions regarding strategy.

In response to a crisis, senior commanders decide on military ends (or provide advice to national leadership on what ends are feasible) based on the ways and means at their disposal. During peacetime planning, military leaders must first attempt to identify potential future contingencies. Then they must lead the procurement of the appropriate means and implement the development of ways over time.²⁸ In 2010, three British senior officers raised concerns over conceptual weakness in the Armed Forces, bemoaning the lost art of British strategic thinking in the *RUSI Journal*.²⁹ They called for an examination of the military's ability to develop strategic thinking, which springs from development of the conceptual component, and is the key to successful and politically acceptable military operations.³⁰

Ultimately, military strategy, planning and execution all depend heavily on the experience, intellect and decision-making of fallible human beings. It is essential to provide commanders with necessary training, education and experience to develop these skills, all of which are underpinned by service doctrine. By misstating the purpose of doctrine and downplaying its usefulness on the first page of the UK military's most important volume, BDD opens a door to clouded thinking regarding the processes and tools used to develop the minds of service personnel. Though an argument focusing on a narrow portion of a document may be refuted as overly semantic, doctrine is designed to provide a common language for military professionals requiring precision, clarity of message and consistency. It is therefore incumbent upon military officers to critique these documents, as proposed by *US Army Field Manual 3-0, Operations*. '[L]eaders must examine and debate the doctrine, measuring it against their experience and strategic, operational, and tactical realities.'³¹ Though these realities change with time and context, the intellectual standard for such debate was set by Clausewitz. His words are therefore ideal for inclusion in doctrine, but the utility is lost without a clear understanding of his true meaning.

Arguably, the robust and erudite nature of Clausewitz's insights makes *On War* the most fertile ground for quotations on military matters ever devised. Unfortunately, what is all too commonplace is authors who take licence with his language to make them fit for purpose. In the case of BDD's Foreword, Clausewitz's description of doctrine as 'meant to educate the mind of the future commander... not to accompany him to the battlefield' can easily lead the reader astray.³² As couched in BDD, this statement, intended to stress doctrine's importance, actually undermines its credibility. Describing doctrine as an educational resource, meant to be left at home, rather than as a tool used by military personnel on operations is wildly inaccurate. Clausewitz never intended this statement to relate to doctrines, but rather theory, as this article will explore. Disappointingly, BDD is not the only senior doctrinal publication to take such license. The British Army's capstone doctrine, *Army Doctrine Publication, Operations* uses the now familiar quote (in a slightly altered fashion) to describe the conceptual component, rather than doctrine. It reads: 'the conceptual component is meant to educate the mind of the future commander...'³³ What is troubling about the use of this 'quote' is that it either represents one of two negative outcomes. At best, this is abysmal editing and at worst, it is intellectually dishonest. By not including brackets, parentheses or some other

identifying mark around the words 'conceptual component' the doctrine passes these words as the author's, despite a footnote which leads the reader to a version of *On War* that uses the word 'doctrine'. Taken together, this misuse of Clausewitz's language in two of the British Armed Force's central volumes does not signal the disintegration of military thought, as quotes of this nature are often useful in bolstering a theoretical point. What both of these examples demonstrate is a misinterpretation of their true meaning. By bending his words to show his praise for utility of doctrine, the authors demonstrate unfamiliarity with the text, damaging the conceptual credibility of JDP 0-01.

Interestingly, the now familiar quote from *On War* appears in *Book Two, Chapter Two* in a section titled, 'Theory Should Be Study, Not Doctrine'. Clausewitz articulates a difference between the two concepts to, in part, draw a firm distinction between his writings and those of his contemporaries, including noted thinkers Baron Antoine Jomini and Prussian theorist Heinrich von Bülow. These men both espouse unique but relatively scientific approaches to warfare, with the latter's theory culminating in warfare as a series of geometric principles.³⁴ Clausewitz found merit in parts of these theories, but ultimately deemed them unrealistic.³⁵ In his view, strategy (the culmination of theory) is 'not only the forces susceptible to mathematical analysis; no, the realm of the military art extends wherever in psychology our intelligence discovers a resource that can serve a soldier.'³⁶ Clausewitz's rejection of a mathematical approach to warfare is not his final word, as he explores the need for clear direction in tactics, saying, '[p]rinciples, rules, regulations and methods are, however, indispensable concepts to or for that part of the theory of war that leads to positive doctrines.'³⁷ Positive doctrines, he argues, are useful but overly prescriptive, unless the overarching theory properly accounts for the inherently complex nature of warfare. Clausewitz emphasises that theory must address this complexity through the prism of his paradoxical trinity of passion, chance and reason, and its respective bedfellows, the people, the commander and his army, and the government. What is growing increasingly clear is that the military commander must now do much more than execute the strategy; they must manage chance *and* reason because the political appetite for operations and procurement is often unreasonable. Prime Minister David Cameron's wish to engage in military action in Syria, despite a clear end-state and the lack of critical military capabilities, is instructive in this regard.

For the military, theory therefore spans a broad spectrum of study from the necessarily rigid doctrines of the tactical level, to the crafting of strategy - the intricate meshing of ends, ways and means at the strategic level. It can be inferred that a talented commander who has studied theory and understands doctrine will have greater ability to craft strategy that is more likely to overcome the play of chance and achieve the military aim. The military aim will contribute to the fulfilment of the political objective, which stems from the government's reason. Recent history suggests that the objectives will be incomplete or unattainable, leaving the military to muddle-through difficult and costly operational situations. Theory that fails to address the concerns of the trinity 'conflicts with reality' and is, in his words, 'totally useless.'³⁸ Defence's ability to recognize the failings of unreasonable political decisions is essential in

crafting the right policy. Though often pressed to praise policy in public and criticize in private, it is curious that with so much controversy surrounding military operations since September 11, 2001 that no senior military figure still serving has taken anything more than a token stand against government policy. Whilst a military subservient to freely elected politicians is a cornerstone of democracy, it seems that senior military officers may have lost some perspective on serving the people of Britain rather than the political class. This misnomer no doubt springs, in part, from how the British military educates its force and how it addresses its fundamental principles.

In an attempt to lay out its purpose, British doctrine blurs the distinction between theory and doctrine and betrays a larger lesson regarding military thought. Clausewitz's central theme is the need for the commander to constantly apply intellectual rigour, which is why doctrine and the conceptual component are so important, especially in an era where the trinity he espoused no longer functions as it should, with so much more being asked of military commanders, and the government abandoning reason for passion or political gain. Doctrine's role in developing this rigour leads to another controversial phrase from BDD, which is analyzed in the subsequent dialogue on thinking.

How to Think or What to Think?

Though not attributed to a specific author, the second passage in BDD worth exploring deals with a concept that pervades British military doctrine. Its claim that 'doctrine is said to guide commanders and subordinates how to think and not what to think' is far from unique.³⁹ The premise of teaching one 'how to think' versus 'what to think' is found in military training and educational materials the world over.⁴⁰ Despite wide usage, it is difficult to discern what this phrase actually implies. By examining the constituent parts of the phrase 'how to think' it is possible to determine what message the authors of BDD wished to convey. The Oxford Dictionary defines 'how' in this context as 'the way in which', and 'think' as to 'use one's mind actively to form connected ideas'. It is therefore prudent to describe 'how to think' as 'the way in which one uses their mind to actively form connected ideas'. Clearly, doctrine has a key role to play in exposing its readers to a variety of subjects, thus increasing the likelihood of more successfully connected ideas. In the view of the British Army, doctrine 'offers a handrail to assist commanders and staff in the planning and executing of current and future operations in order to achieve success. **There can be no excuse for not reading, knowing or using it.** (emphasis in original).⁴¹ Whilst it can *assist* military professionals in framing their thinking and decision making (how to think), doctrine obviously cannot offer a perfect solution (what to think) for those that lack sound military judgment.

On the surface this seems to end the debate on the purpose of doctrine, but this is not the full story. An alternative perspective is offered in *United States Air Force Doctrine Document 1* (AFDD-1), which reads: '[doctrine] provides sufficient information on what to do, but does not specifically say how to do it.'⁴² Significantly, AFDD-1 focuses on what and how 'to do' rather than 'to think'. This is an important distinction as it describes not the process of using one's mind to

come to a decision, but rather on options available to the commander. Military doctrine offers guidance on how to think, and by presenting a range of options it also *does* tell the reader what to think regarding a host of complex issues across a wide range of military tasks. For example, *British Army Field Manual (AFM): Countering Insurgency* describes how the British Army plans and conducts counterinsurgency operations at the tactical level.⁴³ In its 206 pages, *AFM Countering Insurgency* contains seven case studies and twelve chapters, each with several sub-sections, all arguably designed to aid the commander or his subordinates in determining how military professionals dealt with similar situations in the past, and what they need to consider in the present. The various tomes of British doctrine deal with subjects including, *Campaign Planning, Joint Medical Doctrine, Civil Military Cooperation, Media Operations*, and a vast array of other joint and single-service topics. Each of these publications contains an in-depth look at the relevant subject matter detailing what British military professionals (and their civilian counterparts) should think and do in various contextual situations.

As a starting point or baseline of knowledge, doctrine aids the commander in preparing for what former US Defense Secretary Donald Rumsfeld quite humorously but insightfully called 'unknown unknowns'.⁴⁴ Not surprisingly, such a pithy statement quickly entered the defence lexicon and describes the things 'we don't know we don't know,' and has spurred purveyors of military thought to focus on how to mitigate the impact of these unanticipated events.

Every operational situation is unique, so commanders must endeavour to deal with 'unknown unknowns' by identifying linkages and commonalities with their previous experience and knowledge of historical precedents. Doctrine's role in the generation of fighting power is therefore fundamental, but limited: 'With each conflict being fought according to quite different political, military and legal requirements from the last, the question might be asked: how can doctrine be guaranteed to give us the keys to success on the battlefield? The answer to the question is that it cannot.'⁴⁵ Though doctrine may not provide tidy solutions for operational problems, familiarity with its content allows a commander access to a trove of relevant information regarding what to think. Clausewitz contends that '[t]heory exists so that one need not start afresh each time sorting out the material and ploughing through it, but will find it ready to hand and in good order.'⁴⁶ This is not to say that military victories are impossible without a comprehensive doctrine library that is understood and used by commanders in the field. What is clear from history, and the more recent past, is the fusion of appropriate doctrinal concepts and outstanding leadership provides national leaders the opportunity to maximise the utility of military force. The US-led military intervention in Iraq is an example of the unquestionable role of doctrine in preparing, or in this case adapting, a military force for battle.

By 2006, the military effort in Iraq had reached a near breaking-point. US casualty figures were reported nightly on news broadcasts and comparisons to Vietnam were ever present. In an effort to fuse the lessons of history with the realities on the ground in Iraq, then Lieutenant Generals David Petraeus of the US Army and James Amos of the US Marine Corps co-released *Army Field Manual 3-24* (also known as *Marine Corps Warfighting Publication 3-33.5*).

Titled *Counterinsurgency (COIN)*, the manual's stated purpose was to 'fill a doctrinal gap' to 'provide principles and guidelines for counterinsurgency operations.'⁴⁷ What followed the release of FM 3-24 is now well known to history. Petraeus's ascendancy to the Commander of Multinational Force Iraq and his execution of the so-called 'surge', along with an indigenous rejection of the insurgency that entered the public consciousness in the form of the Sunni 'Awakening', turned the tide in 2007. Whilst the lasting impact of the surge on the long-term security of Iraq is yet unknown, it is clear that his leadership along with the implementation of the principles outlined in FM 3-24 led to a palatable exit for US forces. When properly supported and resourced, the right commander, applying an appropriate strategy is often the difference between defeat and victory. It is this 'craftsmanship' that ties together the concepts of what and how to think, as stated by J.F.C. Fuller: "...what to think" of itself is not sufficient; it may be said to supply the raw material - historical facts, etc. - in which "how to think" operates. "What to think" supplies us with bricks and mortar, "how to think" with craftsmanship. Both are all important and complimentary, for the greater our knowledge, the greater, so to speak, the capital at the disposal of our originality.⁴⁸ The significance of a commander's 'originality' on operations, or indeed national policy, cannot be understated, highlighting the need to focus on developing the thought processes of individuals through a variety of means.

Redefining the Conceptual Component

As previously defined, doctrine is but one of the three elements, along with the principles of war and conceptual innovation that comprise the conceptual component. Notably absent is any direct emphasis on critical thinking skills. This somewhat nebulous definition of the conceptual component is hampered by the confusing juxtaposition of its three elements. BDD further defines the principles of war as 'enduring principles, whose expression and emphasis change only in relation to context, and are consistent with similar principles applied by the UK's major allies and potential coalition partners.'⁴⁹ Based on this description and the aforementioned definition of doctrine, the principles do not stand-alone as a part of the conceptual component. Conversely, they are the foundation upon which all service doctrine is created, not a separate concept. Thus, the conceptual component is now only comprised of doctrine (which includes the principles of war) and conceptual innovation. The component as currently defined does not capture all of its necessary elements, and the evolution of modern doctrine highlights this fact.

Conceptual innovation was evident in the development of FM 3-24, which not only served as a catalyst for an (arguably) operationally successful plan in Iraq, but also led to a rethinking of doctrine's utility in general. For the British Army to harness the power of innovation, a change in culture with respect to both the creation and usage of doctrine was required, as argued by Stuart Griffin. 'Though an iteration of British *COIN* doctrine remained extant at the time of US *COIN*, it was not widely read within the British army, certainly not within the wider armed forces, and creative thinking in the field of counterinsurgency had largely atrophied.'⁵⁰ Though different in timing and relevance, the American and British experiences with *COIN* doctrine are instructive with respect to the conceptual component. Innovation like

the development of contextually appropriate doctrine does not happen by chance, thus the conceptual component is incomplete. This imbalance is more evident if viewed through an *ends, ways and means* analogy. The conceptual component contains the *ends* in the form of new doctrine; the *means* in conceptual innovation, but it lacks the *ways*. How does an individual or an organisation go about innovating and problem solving? The answer is critical thinking. One of the problems surrounding the development of critical thinking is that whilst few will underestimate its importance, there is no consensus agreement on how best to define the concept or to put it into practice.

Diane Halpern offers a useful definition of critical thinking as 'the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed.'⁵¹ An individual's cognitive skills, purposeful and reasoned thinking are not only gleaned from reading doctrine or from learned experience. Study of principles and procedures can provide relevant standards and criteria with which one can measure and test against, but learning how to think is a unique discipline.⁵² Writings on leadership and command are filled with language that stresses the importance of thinking, but too little attention is actually paid to instilling service personnel with this skill in an academic environment. Julian Lindley-French, who is leading *Connected Forces, Connected Minds*, a NATO effort to ensure professional military education is meeting the future needs of the Alliance, agrees. 'The link between commanders and academic expertise is too often weak, preventing effective reach-back from the field to knowledge communities... Sadly, too many commanders remain dismissive of knowledge and expertise.'⁵³ Though many in the forces possess traits that give them the potential to become excellent critical thinkers, the development of thought should be specifically addressed as one of the three essential elements of the conceptual component. A reorganised conceptual component into the three pillars of doctrine (now including the principles of war), conceptual innovation and critical thinking will introduce a more specific emphasis on the development of military thought in all service personnel. This rejuvenated focus, when combined with a new theoretical relationship between the constituent components of fighting power will encourage all subordinate military publications, training courses and educational programs to follow suit. Institutional acknowledgement of the importance of critical thinking should also lead to more robust personnel policies designed to best utilise those individuals with a high capacity for thought, especially in specialist areas.

Primus inter pares

Whilst a conceptual component emphasizing the need for targeted development of thinking is a necessary step for the Armed Forces, the current model describing the three components of fighting power is also problematic. This model, recently reinforced in JDP 0-30, is seen in Figure 1.

What this model implies is that in the majority of cases the components of fighting power will be applied without reference to the other two. The Venn Diagram is typically used for its

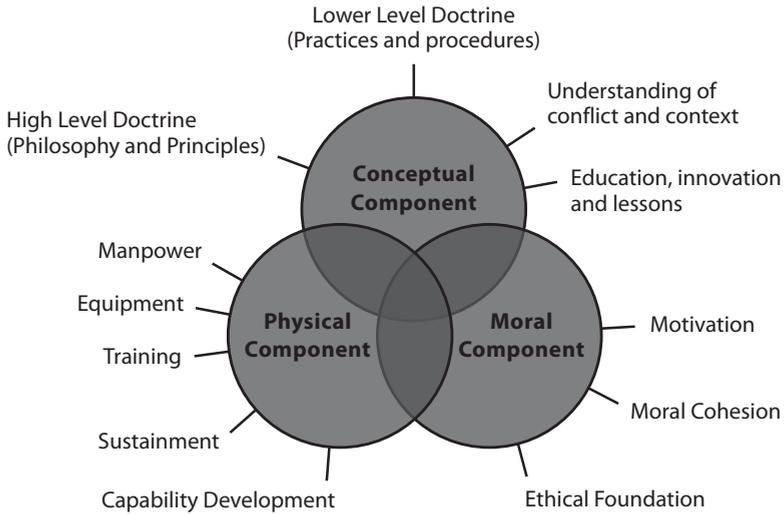


Fig 1. The Components of Fighting Power *Joint Doctrine Publication 0-30, 2013*

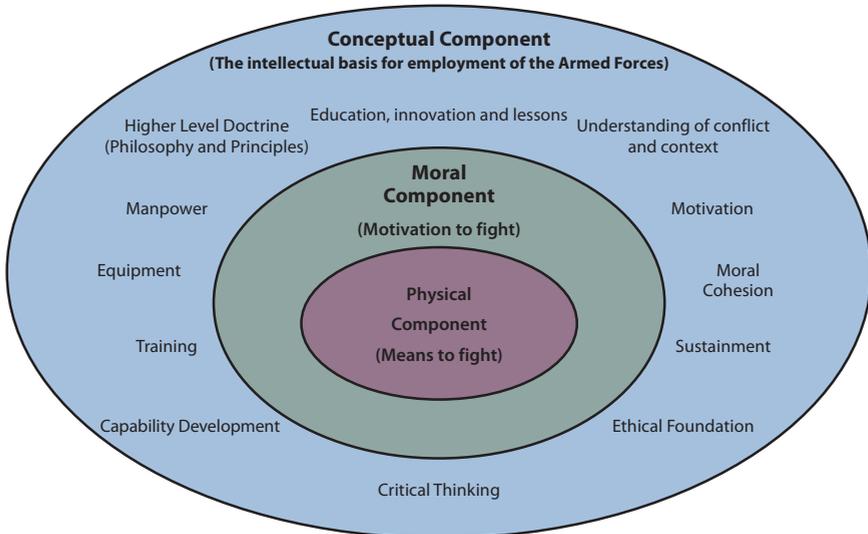


Fig 2. The Components of Fighting Power Revised

simplicity and visual balance, but in this case it sends a confusing message about the relative importance of the components. The conceptual will in most cases, especially in a time of austerity, be the *primus inter pares* of the components, and will underpin the other two in *all* cases. No military activity, whether it be training, procurement, mentoring or the application of force, can be accomplished without an understanding of, and adherence to, the elements of the conceptual; doctrine, innovation and critical thinking.

For this reason, a more helpful (and accurate) visual representation is proposed in Figure 2. The new model seeks to emphasise the conceptual component's centrality to every facet of the military profession. Far from an original creation, this 'new' model builds on the original version inspired by Professor Howard and published in the 1989 BMD; returning the conceptual component to its rightful place as the foundation of fighting power.

Sound critical thinking built on a foundation of best practice and cutting-edge doctrine must permeate every activity, at all levels. Contemporary speeches and literature from British military senior leaders are filled with language emphasising the importance of developing the highest quality soldiers, sailors, airmen, marines and civilians. It is time for the MOD as an institution to emphatically state that this development of people will not be sacrificed; changing in the way BDD describes fighting power is a necessary first step.

Conclusions: A Way Forward

The combination of financial austerity, high operations tempo and the growing complexity of the geostrategic landscape present a significant test for the British military. A highly-educated, well-trained, motivated and professional force is critical in maintaining Britain's reputation as one of the world's leading militaries. Maintaining such a force cannot be done on the cheap - it takes thoughtful and calculated decisions, often without all of the information necessary to do so. Senior officers must have the moral courage to fight against the tyranny of gold-plated acquisition solutions that drain so much from wider defence. In addition, leaders must digest the difficult fact that the Clausewitzian trinity of the passion of the people, the military commander's management of chance and the government's distillation of reason is fundamentally broken. The Armed Forces are increasingly asked to deal with two-thirds of the trinity, since the government's decision-making process is often driven by passion, rather than reason.

Whatever further measures are implemented to address the improvement of the conceptual component, they must avoid a common pitfall of defence reform, so succinctly described by former Chief of the General Staff, Sir Mike Jackson. 'Far too often, the MOD confuses activity with achievement.'⁵⁴ Changes including increased joint oversight of education and better career management policies are probably necessary to fully realise a renewed focus on the conceptual component, but these types of measures will not gain traction without a change in culture. Without this cultural shift, even systematic changes will not lead to a successful transformation in how defence approaches the conceptual component, which is central to Britain's strategic future.

By addressing the doctrine before attempting any number of disassociated change programmes, the military will send a clear signal to a variety of key audiences. Ministers, Allies and serving personnel will understand that defence is serious about transforming and subsequently maintaining its standing as a leading military power. The Armed Forces will then have the impetus to implement logical steps aimed at reinforcing the development of the critical thinking skills that will forever remain in high demand amongst military leaders at all levels.

The conceptual component of fighting power is the foundation of every military activity. Clausewitz understood and articulated this fact, and this is why the misapplication of his words in senior British military doctrinal publications is so unfortunate. Strategy, theory, doctrine are all paradoxically part of the conceptual component and a result of its application. This complexity is easily overlooked, especially in an age where the acquisition of modern technology and the allocation of scarce financial resources dominates much of the intellectual capacity of the Armed Services. The trials of 21st Century warfare have revealed the enormous challenges faced by those responsible for balancing the ends, ways and means of national policy. Prudence therefore demands that defence renew and energise its focus on developing the minds of the current and future generations of military professionals. Otherwise, it runs the risk that these skills will atrophy until once again spurred on by the demands of war.

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Developing a Flexible Royal Air Force for an Age of Uncertainty

By Group Captain Paul O'Neill

In the era of contingent operations, the range of threats that UK Defence may be called on to address far exceeds the financial resources the country can afford to provide. The challenge for the future, therefore, is to ensure that the Armed Forces adapt to the circumstances they face. Moreover, the perception of a lack of will for prolonged interventions means that the Services will need to identify and adapt quickly so that they maximise the capabilities that are available. This paper argues that flexibility will become essential to operational success. Adapting to a strategy of flexibility requires changes across a range of domains, covering: structures and governance; processes; people and; rewards. As the first of a two part series, this paper focuses on the options that may be available to the Royal Air Force in relation to its structure and processes. It proposes an adaptable design model that builds on the Whole Force Approach but with more diversity and differentiation of the various component parts of the structure. The second, companion, part will consider the people and reward issues that are needed to complete the picture of coherent organisational change. Together the papers seek to excite debate about how the RAF could change to become more flexible and thus better suited to the dynamic and unpredictable world it faces.

Introduction

The National Security Strategy places UK strategy in ‘an age of uncertainty’.¹ With the end of combat operations in Iraq and Afghanistan the UK is no longer committed to a known conflict (‘The War’) and has to be ready to face a range of possible scenarios whose character is as yet unknown (‘A War’). However, the UK can neither afford the luxury of second guessing the future and reconfiguring wholesale for a conflict that may not happen, nor develop forces with the disparate capabilities needed for the full range of potential scenarios in the numbers that may be needed. Whilst we can speculate that the future might be characterised by increasing competition amongst a broader range of adversaries using novel approaches that exploit their relative advantages, the equipment and people with which the UK faces that future are likely to be those developed for the challenges of the past. The equipment may no longer provide a quantitative or qualitative edge over potential adversaries,² and the UK’s continuing financial challenges mean that the 2015 Defence Review is unlikely to reverse this relative decline. Consequently, whatever the future holds, the UK Armed Services will have to ‘muddle through’, doing their best with whatever they have got at the time they are next called on to act in support of UK national interests.³

The Royal Air Force has always been able to adapt, typically the result of technological innovation, but this has not always happened quickly and, given the current political and public reluctance to become engaged in protracted operations, the Service will probably have little time in which to adapt to the demands of specific operations. Greater flexibility will be increasingly important if the Royal Air Force is to succeed in future conflicts. For the purposes of this paper, flexibility is defined as *‘the ability to change readily to meet new circumstances; it comprises agility, responsiveness, resilience, acuity and adaptability.’*⁴ In the past, flexibility came from a balanced force, but this can no longer be assumed: Future Force 2020 reduces mass and takes risks with a number of capabilities that impact on areas essential for flexibility; the increased reliance on multi-role systems, that by implication are not optimised for any specific role, and reduced levels of systems and personnel redundancy.⁵ However, whilst this lack of mass undoubtedly erodes physical resilience, the Royal Air Force’s smaller size may help enhance its organisational flexibility; commercial experience shows that smaller organisations can be more agile than larger ones.

This paper is the first part of two think-pieces that considers how the Royal Air Force could organise to place flexibility at the heart of its strategy. Together, they seek to prompt debate about the choices the Royal Air Force should confront about how it is organised and peopled. Building on Galbraith’s ‘Star Model’ for aligning organisations with their strategy, and Mintzberg’s analysis of an organisation’s component parts, the papers argue that flexibility is needed in the Royal Air Force’s structure, processes and people. They identify a need to move from the current, rather mechanistic, structures to a more organic approach that can adapt to the changing demands of the environment. Fundamentally, therefore, these think-pieces seek to be provocative and stimulate a debate about what the organization is, and what it

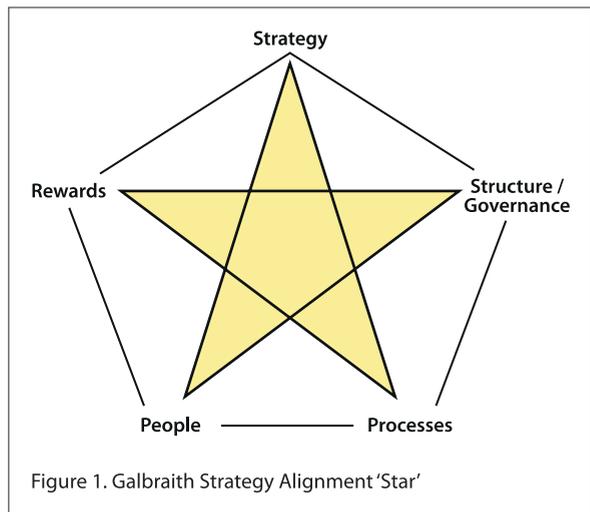
should become. They do not claim to have answers to the challenges the Royal Air Force faces. However, they share a view that a creative tension between structure and environment is essential to stimulating thinking about change and is best achieved through workforce diversity, individually through different backgrounds and ways of making sense of the world, and collectively through cross-functional teams and partnerships that bring individual differences into contact with each other, generating new insights into old and emerging challenges.

This paper focuses on the need for diversity at the structural and process level, proposing an 'Adaptive Design Model' (ADM) comprising a reduced core of Regular personnel around which more capability (mass and specific skills) would be held in an expanded group of partners, including Reserves, contractors, academics, civilian experts etc. In many respects, it represents an evolution of the Whole Force Approach, but in a more organic form that provides for greater differentiation within the various components comprising the Core and Periphery; moreover, the ADM itself needs to remain adaptive to the changing circumstances in which it operates. The changes advocated in the people and reward domains are addressed in a companion paper, largely because they are concerned with nuanced change to the current Regular employment model rather than fundamental matters of substance.⁶

Organising the Royal Air Force Around a Strategy of Flexibility

Organisations are complex social models and, like the people who comprise them, can be motivated as much by self-preservation as by a rational assessment of their circumstances: an anonymous senior US Army officer is alleged to have stated during the Vietnam War, 'I'll be damned if I permit the US Army, its institutions, its doctrine and its traditions, to be destroyed just to win this lousy war'.⁷ Change in the external environment, therefore, may not be enough to ensure that organisations adapt; internally, enough of the organisation needs to be convinced that the proposed change is worth the costs.⁸ This requires effective internal communication, not just to explain the new strategy but, crucially, the reasons why it is being changed. If the new strategy is to be accepted by enough of the organisation, the consent of the leaders of the informal power network is at least as important as securing support from the formal hierarchy.

Galbraith argues that changes to an organisation's strategy must be supported by mutually reinforcing action in four other organisational



domains (structures, processes, people and rewards) - Figure 1.⁹ These domains are linked in a complex set of internal relationships, where activity in one domain impacts on all of the others, potentially destabilising the whole. Change is, however, dynamic and a holistic view is needed of the domains if the new strategy is to be successful. UK Defence's current (fragmented) approach to flexibility in which the Defence Reform Review's structural changes seem to have happened in advance of process reform and independently of the New Employment Model's developments in people and rewards.

Strategy. Strategy seeks to balance and be consistent with the organisation's external environment by setting the overall direction and providing the framework within which business units and people act. The strategy should be a lens for focusing the organisation's efforts, including informing decisions on priorities and resources. Galbraith describes three components of a strategy: what to do; where to play, and; how to win. 'What to do' refers to the organisation's goals and objectives. 'Where to play', in the context of the UK Armed Forces, covers whether the UK should be capable of autonomous action or not, full-spectrum or niche capable and within which regions do its interests lie. 'How to win' deals with how the organisation will secure its competitive advantage, although as Galbraith warns, no strategy for competitive advantage is permanent and a crucial part of any strategy, therefore, has to be an appreciation of its duration.¹⁰

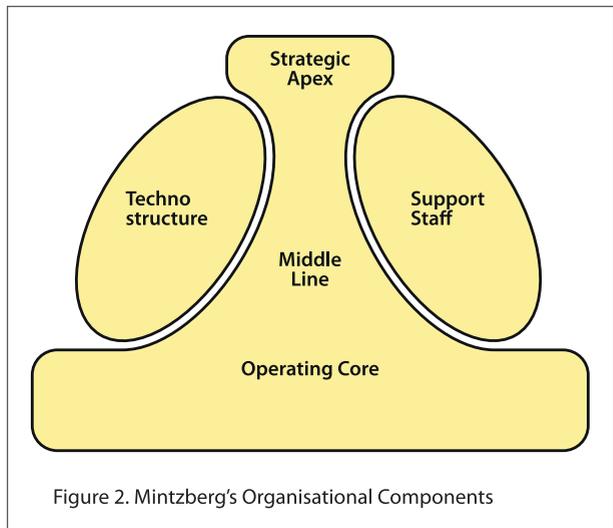


Figure 2. Mintzberg's Organisational Components

Structure. Structure (or Governance) is about the nature and distribution of power and authority in the hierarchy, both formally and informally. Organisations, however, are rarely monolithic, and different parts of the structure will require different approaches. Mintzberg identifies five parts to an organisation – Figure 2. The 'Strategic Apex' provides the overall direction and control for a 'Middle Line' (or management) that oversees production by the 'Operating Core', supported by a 'Techno-structure' that designs, plans and changes the operating workflow and trains people to implement the processes. Finally, a 'Support Staff', including procurement, finance, HR and training functions, supports the other parts of the organisation by providing specialist advice and acting as the lubricant that reduces friction in the other components, especially where the different organisational elements come into contact.¹¹ If Mintzberg is right, it becomes appropriate to talk about an organisation of

multiple workforces, not just based on regular or Reserve service, but within each element based on the outputs expected of the different areas. A 'one size fits all' employment model thus looks increasingly unhelpful to creating true workforce flexibility.

The Royal Air Force still represents a largely bureaucratic structure based on industrial age concepts – what Mintzberg calls a 'Machine Bureaucracy'. Organisations of this sort rely on formalised behaviour to reduce variability and improve prediction and control, which they do through standardising procedures and skills. In many respects, such as predictability and accountability, bureaucracies are effective and suit governmental activities because such organisations are less likely to make arbitrary decisions with public money or abuse their power. Moreover, military operations need predictability in the behaviour of their component parts. In contested environments, such as war, centralisation supports cooperation amongst units, even to the extent that one unit accepts higher levels of risk/attrition for the greater good,¹² such as those squadrons conducting JP233 missions against heavily defended Iraqi airfields to allow other squadrons and land forces to enjoy more permissive environments. This need for cooperation is particularly acute in coalition operations, even where the battlespace can be divided into discrete operating areas based on national responsibilities. However, bureaucracies do not cope well in dynamic environments: where the environment is prone to unpredictability, organic structures that allow decentralised decision making tend to be better at adapting quickly. Mintzberg calls these structures 'Adhocracies', which he characterises as having small organic structures and the ability to adapt quickly.¹³ This does not mean that the adhocracy has to be chaotic; clarity of structure and process is still needed, but what characterises innovative organisations is their ability to change their structures when circumstances change and the old configuration no longer supports the organisation's strategic objectives.¹⁴ Guerrilla movements are classic examples of adhocracies, although they also have a tendency to ossify their structures as they morph from being organisations in opposition to taking on responsibility for delivering the services of the replaced state. This is not just the preserve of guerrilla movements however, and Special Forces represent a form of adhocracy within a wider bureaucratic military structure. It could also be argued that the Servicing Commandos formed within the Royal Air Force to support the expeditionary fighter units operating from makeshift airfields in western Europe immediately after D-Day represent a form of adhocracy.

Militaries are multifaceted and there are clear attractions in having some bureaucratic elements within the structure, but if the bureaucratic component is too extensive, the organisation is likely to be slow to adapt. On the other hand, adhocracies provide flexibility but little consistency, and are expensive in terms of the effort needed to manage the frictions that arise from their more fluid nature. There is also a danger that local flexibility in an adhocracy can be delivered at the expense of the flexibility of the organisation as a whole if the adaptation works counter to other initiatives being adopted elsewhere.¹⁵ Successive Defence Reviews have often stripped out those elements of the structure that manage friction in a belief that it is possible to isolate the efficiency of the 'front line' from the 'non-frontline' functions acting in support. A crucial issue, therefore, is to understand the main driver for the Royal Air Force's operating

model; if it is finance, then centralisation under a bureaucratic structure is more likely to reduce operating costs. If however, the driver is effectiveness through improved flexibility, then a decentralised structure, with a greater demand for 'non-frontline' activity, is probably more suitable.

The choice between being centralised or decentralised need not be entirely binary, however, as flexible organisations can support different organisational structures simultaneously, enabling them to move people and information rapidly to where they are needed.¹⁶ Consequently, it should be possible to have elements of both bureaucracy and adhocracy in the same organisation, either in different components (e.g. a bureaucratic Operating Core and adhoc Techno-structure that provides the flexibility the organisation wants) or within a model that contains a stable (bureaucratic or functional) element, and a more dynamic, flexible component, potentially within the same part of the structure. Galbraith calls this hybrid structure the 'Reconfigurable Functional Organisation' (RFO).¹⁷ The stable element is functionally organised, with high levels of standardisation and routines with a more innovative element operating organically, moving people across functions or Services, and forming collaborations in cross-functional teams, of which Jointery is but one example. One of the challenges of this type of organisation is how to manage its dual nature in such a way that still protects the balance between stability and innovation.¹⁸ The rapid disbandment of the RAF Servicing Commandos once their role had been fulfilled is largely attributed to the failure to fit the dominant organisational culture or approach, and indicates that accommodating diversity is not without cost or the occasional casualties.¹⁹

Diversity, including but not limited to the protected characteristics under discrimination legislation, makes a crucial contribution to flexibility because the individuals bring different perspectives to the problems the team jointly faces. The value of diversity was clearly evident in US adaptation to meet the challenges of counter-insurgency (COIN).²⁰ New structures were put in place, including Modular Brigades and a rebalancing of the Active and Reserve Components,²¹ that sought to create heterogeneous teams that replicated the range of capabilities of larger formations but within smaller, more adaptable structures, in much the same way that Napoleon I used Corps as smaller and more agile armies in the late 18th Century.²² US Brigade Combat Teams (BCTs) attempt to lower the level at which cross-functionality occurs within the Operating Core, but crucially, they integrate different functional skills within the main structure. Combined planning to exploit the capabilities in each of the functional components is thus done *ab initio* rather than as 'best effort support' to a predefined plan favouring one component's contribution. Another success born from diversity was the US Joint Improvised Explosive Device Defeat Organisation (JIJEDDO), whereby bringing together individuals from across the Services, academia and industry, a difficult problem was addressed quickly and with considerable success.

The time is ripe for the Royal Air Force to reconsider its Cold War structure, in particular the relative position of station and squadron. Although the flying squadron is the primary unit

of Royal Air Force fighting power, the station seems to have been elevated to the position of primacy. Station command is seen as the job to which ambitious officers should aspire, to the extent that UK Main Operating Bases have had first pick of the command talent and those (still undoubtedly talented individuals) unsuccessful in selection for a Main Operating Base are appointed to command Expeditionary Air Wings on operations. One could argue that only those who had proved themselves in the UK environment should be appointed to operational command.

In the Inter War years, squadrons were seen more like Army Regiments, with embedded life support functions that made them autonomous operating entities with a spread of capabilities (cross-functional teams).²³ It is noticeable that until 1940, Royal Air Force stations did not even have crests as such symbols of loyalty and identity were the preserve of the squadrons. Being fixed around permanent bases during the Second World War changed this and gradually support functions have been stripped from the squadron and held centrally, leaving squadrons to focus on flying. Centralising in this way allowed for greater efficiency in support staffs and made sense during the Second World War and Cold War where squadrons depended on operating from fixed stations but, in an era of expeditionary warfare, this is now less relevant. Royal Air Force stations do not deploy forward, squadrons do, and we should be reinvesting in the squadron as a cross-functional team. Whilst Expeditionary Air Wings provide a deployable structure, they are more akin to deployable stations rather than making the combat element truly deployable. Refocusing on the squadron by embedding its organic support so it becomes a deployable entity in its own right would move the Royal Air Force closer to the adaptability of an adhocracy. It would also provide lower level commanders with the freedom to act in a manner that could encourage genuine innovation, much as the German Reichswehr in the 1920s and 1930s encouraged combat commanders down to company level to operate with other arms as highly mobile units innovating responses to the changing battlefield circumstances without waiting for directions from above.²⁴ Outsourcing much of the running of the permanent bases²⁵ and centralising back office functions could offset the cost of expanding the techno-structure and support staff elements of the squadrons. This approach is arguably closer to Trenchard's original conception of the Royal Air Force of the Inter War years when the Service needed to be both cost effective and adaptable to new situations that lacked precedent, such as air policing actions.

Processes. If structure is the organisation's skeleton, the processes are its physiology - the way its decisions are made and how information is shared.²⁶ The processes include the formal components of doctrine, management procedures, priorities and the corresponding resource allocation, and the informal means by which work is done in practice. The formal processes are those most clearly under the control of the system because they are explicit and generally owned by people recognised to have the authority to effect changes. The informal processes are less easily manipulated in a conscious way as they tend to be bottomup and continuously change as working relationships change. Physical location is perhaps one of the easiest ways to effect change on the informal processes, forcing interaction amongst groups that changes

the way people see each other, but the spread of mass communication and data access, such as email, shared filing and social media have all impacted on the communication arteries that feed the organisation's muscles and sinews.

Processes have to be responsive and adapt to the organisational structure that the circumstances demand. Accepting that a strategy of flexibility requires the preservation of a potential for adaptation, irrespective of the organisation's form at any given time, the processes need to support future change. As effective change depends on information, developing processes for better sharing of information across Defence is essential.

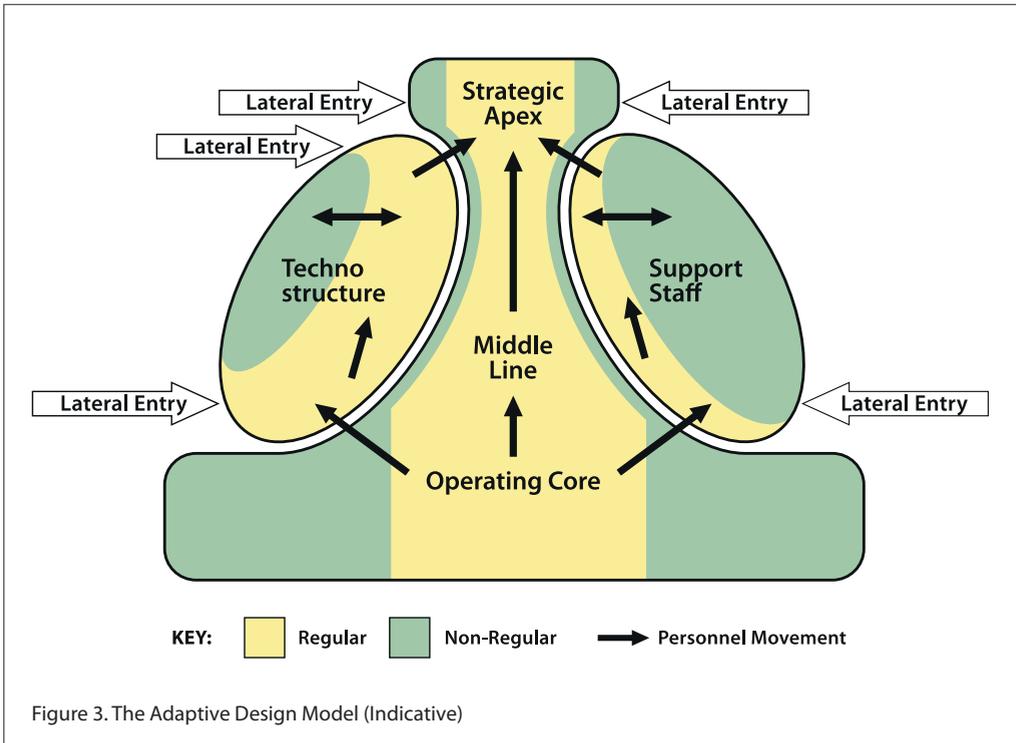
A particular challenge today, for which our processes are currently ill prepared, is in capturing experience and the lessons that flow from that experience. Defence has over a decade of continuous combat and thus a cadre of highly experienced operational commanders. As combat operations end, there is a need to ensure that the experience of those serving is captured, and mechanisms are put in place to grow the next generation of operational commanders who cannot rely on being forged in the caldron of battle. Experience is a highly perishable commodity – senior commanders are perhaps within five to seven years of retirement – and a robust process for capturing their learning is needed now. Regrettably, cuts have often fallen disproportionately on the support staffs responsible for the corporate memory because losing a Lessons Team has no immediate impact, even if the long term effect is significant – McNeill attributes Prussian success in the latter part of the 19th Century to their capacity to learn from deficiencies in their past performance.²⁷ Developing a mentoring process for new operational commanders by using those with recent experience needs to be part of the solution, as will be some form of structured history project to ensure that the enduring lessons are captured for future generations. This cannot be left to individuals to do for themselves, but needs to be systematic and have academic rigour if it is to have most value.

Flexibility will probably always be frustrated by the time it takes to acquire new equipment. The complexity of modern military platforms is such that, unless the UK were to buy off-the-shelf from others, the procurement process is unlikely to be sufficiently responsive to provide new platforms in the timescales needed. Given the economic and strategic benefits of defence industrial capability, such as preserving the capacity for independent national action, the UK is highly unlikely to sacrifice its industrial capacity to produce or extensively modify new platforms. Moreover, with the lifespan of existing major equipment items being measured in multiple decades, an item purchased for today's threats cannot expect to face the same challenges when it is eventually retired. If the procurement of major platforms will never be sufficiently responsive to meet emerging requirements, a solution may be to invest in the weapons those platforms carry, which would have a lower unit cost and lesser complexity, hence they should be quicker to bring into service and easier to withdraw them when they are no longer relevant. Investing in cheaper, less capable but more numerous major platforms, and relying on the adaptability and procurement responsiveness of the

weapons and sensors they carry may be a better way to field the capability that the nation needs at any given time.

An Adaptive Design Model

A truly flexible organisation will always look like its circumstances, thus, whilst structure and processes are crucial elements in successful adaptation, they are contingent. They must have tangible form but, as the future is unknowable, we can neither be certain what it will look like, nor can we develop today the organisation that is configured for the specific conditions the Royal Air Force will face. What is needed, therefore, is an organisation that can adopt a resting form from which it has the potential to change quickly to match whatever challenges it is asked to confront at any given time. However, the breadth of action the Royal Air Force may have to cover is probably beyond the ability of a single (small) workforce to confront or adapt to in sufficient time for all eventualities. Instead of trying to do the impossible, therefore, an alternative model would seek to find a resting place in which structures, process, people and rewards could rest pending the call to change. The strategic end becomes that of ensuring enough flexibility to adapt quickly to future demands and, as soon as the Service was committed, it would adapt and take definite form; flexibility is then the means to the end. Once the operation was over, the 'return to contingency' becomes a return to contingent flexibility until the next time the Royal Air Force needs to take a definite form. The challenge



becomes how to prevent the organisation, having assumed its resting form, from solidifying in such a way that it is unable to adapt to new circumstances.

The ADM envisages a Core and Periphery workforce continuum comprising regular and Reserve Service personnel, Civil Servants, contractors and partners operating across all the different parts of Mintzberg's organisational model. Although similar in many respects to the Whole Force Approach, it seeks to move beyond this by challenging some of the current limitations, including conceptual, and encompassing structural and process components from the RFO model by including bureaucratic and adhocratic elements. It requires much greater differentiation in how different groups are organised, viewed, managed and rewarded – Figure 3.

The idea of a core/periphery workforce is hardly new: the Reichswehr (restricted to no more than 100,000 personnel, and only 4,000 officers, by the Treaty of Versailles), and the US Army and Royal Air Force in the inter-War years all adopted a nucleus approach whereby they invested heavily in the human capability of a small regular force as the core around which they could regenerate capability as required. The specific approach adopted by each differed in its details, with Lord Trenchard emphasising the Operating Core, partly because the Royal Air Force was engaged on operations throughout the period. In 1919, Trenchard planned an organisation around a nucleus with 'deep roots' that would support future expansion when the circumstances required. To achieve this, he prioritised investment in the training systems and facilities, even at the expense of frontline capability. He gave particular importance to engineering skills, partly because the rapid development of a still immature technology posed enough challenges to safety even without enemy action, and because he had seen at close hand the high rates of attrition from accidents during the First World War.²⁸ The Reichswehr on the other hand adopted a different approach that sought to raise standards across all elements under the term '*Fuhrerheer*' (Leaders Army) in which every officer, NCO and soldier was expected to be able to function at the next higher rank.²⁹ Even within this, however, they continued to place particular emphasis on the General Staff, which was their Techno-structure.

The brain and skeleton of the new structure (the Professional Core) would largely be comprised of Regular personnel, acting as a nucleus around which other elements would be added to suit the operational requirements. The skeleton would be relatively consistent across time, but its outward appearance (the flesh provided by the Periphery) would change in size and shape according to need. The Periphery would include Reserve and civilian elements, and include space for contribution from a wide range of partners offering access to skills and insights that would be beyond the capacity of the Regular force.

Across the Operating Core and Middle Line, the Reserve component specifically would be larger than it is today, trained for distinct tasks, such as conventional warfare, COIN, capacity building etc, mobilised as the task demanded and bolted on to the Regular core as necessary. This would operate much like an American Football Team that has bespoke players/teams

for attacking and defensive play. The Reserves would remain largely base-rank fed, save for some specialists whose technical civilian skills were of direct relevance to the military. The primary means of growing the human capital in these parts of the organisation would be through training, with contractors brought in to support non-combat roles, such as logistics and engineering.

The Techno-structure, Support Staffs and Strategic Apex would also comprise Regular, Reserves and contractors, but with a relatively smaller Regular uniformed presence and expansion of the Reserve and Contractor contribution. Lateral entry into all these areas would be possible, in addition to the traditional career path that sees talent grown from within. The primary form of development would be through education, albeit more targeted to meet the specific outputs of the different areas. Structurally, these areas represent the reconfigurable component of Galbraith's RFO, and so cross-functional teams are likely to be the norm.

One of the problems with the current approach to the Reserve component³⁰ has been a focus on the numerical challenge of their expansion under the 2010 Strategic Defence and Security Review, which has been particularly acute for the Army. This is not a new problem as historically, militaries faced with significant drawdown have often looked to retain a small Regular nucleus around which capability can be held at lower levels of readiness (and cost) waiting to be used. The idea that the Reserve offers a cheap way of accessing volume that is unaffordable in the Regular component has been the dominant narrative underpinning current Reserve thinking. Such an approach offers contingent mass and is most appropriate where the required military skills can be generated within an acceptable period of time. This might occur where either a purely military skill is of a low enough level for rapid generation, or where commercial skills are equally relevant within the military, such as medical, cyber and media etc. Conceptually this makes sense, but the quantitative challenge under the 2010 Review has masked the wider opportunities that rethinking the approach to the Reserves could provide in squaring the vicious circle of a reducing regular mass having to face an uncertain world demanding forces that can meet a range of contingencies.

If Reserves are seen merely as cheap Regulars, an opportunity to enhance Royal Air Force capability will be missed by failing to harness the Reserves as a source of bring skills and experiences that the Service cannot obtain from its Regular component. Taking the second path opens the possibilities of the military having access to new capabilities that it would otherwise not possess. Using this model, alongside the first, the Reserve could provide a consultancy-like service for a wider range of skills, such as cultural advice, language expertise or where civilian skills are relevant, most notably perhaps in capacity/state-building activities. The newly formed Security Assistance Group, sitting as part of the Army but delivering a Joint capability, is an encouraging start to a more systematic and intelligent use of some types of Reserve and needs to be supported and used more effectively by the Royal Air Force. This could include using the UK's expatriate populations as potential cultural advisors, interlocutors and linguists should the UK need to operate in that part of the world.

Where Reserves form part of the consultancy capacity, there should be no need to force them, Procrustes-like, into the existing (Regular) branch/trade/rank constructs, or impose the same strict criteria about factors such as nationality requirements, medical standards etc. There could also be merit in offering a non-uniformed Reserve service, as the uniform itself could constrain innovation if the Reservist feels that they have to approximate and be recognisable to the Regular component if they are to be accepted. The non-uniformed Reserve component could also provide a vehicle for the Stabilisation Unit's Deployable Civilian Experts who currently lack the employment protection and mobilisation mechanisms available to the Reservist. Ultimately though, greater flexibility in the types of relationship the Royal Air Force can have with partners would broaden the pool of potential Reserves and contribute to the Service's intellectual capability by increasing its diversity.

A second consideration in rethinking the Reserves component would be to challenge its limited ambition in terms of scale. In other nations, such as the United States, Reserve numbers exceed that of the Regular Force, e.g. the US Army Reserve Component, which includes the Army Reserve and National Guard, is actually larger than the Active Duty Component. There may, therefore, be merit in removing the current ceilings on Reserve numbers. Whilst this may seem counter-intuitive given the difficulties of recruiting Reservists, part of the problem is that there is no clear idea about how they are going to be used (the 'Concept of Employment'). The ADM, including the wider utility piece described above, could provide a way of improving the Reserve 'offer' and make it more attractive and retention positive.

There are of course challenges with expanding the Reserve component. The strategic challenge is the difficulty that the UK economy could face if large numbers were taken out of income generation and put into uniform. The difficulties of supporting Reservists are particularly acute for Small and Medium Enterprises (SMEs), still the largest group of employers in the country, if they lose key employees to mobilisation. There is also evidence that some Reservists do not want to be mobilised merely to do their day job in khaki and may avoid joining the Reserves in a capacity that brought them no intrinsic reward. The experience in attracting Cyber experts may be more instructive in this regard than the success of the medical reserves during operations in Iraq and Afghanistan who were exposed to trauma injuries that they were unlikely to face in civilian employment. However, with a clear concept of how the Reserve would be used within a flexible framework that stressed the value they bring rather than their lower cost, and a stronger understanding of the benefits to individual and employer, it should be possible to hold both the mass and specialist expertise Defence might need in a way that institutionalises manpower flexibility. Reserves are most likely to be attractive to civilian employers where an individual's service brings reciprocal benefit to the civilian employer.

Partnerships represent another aspect of the ADM. The complexity and breadth of tasks that a military may be asked to engage with is vast and it is difficult to be ready for all eventualities

when the culture, people and equipment remain the same.³¹ Moreover, no organisation, let alone a military of the size of the UK Armed Forces, would want or be able to retain within its regular structure the full range of skills at the maximum volume that contingency might demand. Relationships beyond organisational boundaries that secure access to the skills that an organisation is unable or unwilling to provide for itself, therefore, become a crucial part in delivering flexibility. This is more than just the Reserves, important though they are, but needs to consider a more systematic investment in developing links across nations, perhaps routinely training with other nations during Tier 3 exercises, across Government departments, with industry, third sector (including those charities who operate in parts of the world in which we may have current and/or future interests), and academia. Clearly, links of this sort already exist, but a better gearing mechanism is needed to ensure that the organisational cultures and capabilities align.

As well as the Royal Air Force calling on industry to provide people and skills, opportunities may exist for a reverse Reserve arrangement in which Regular military personnel would be 'loaned' to other employers as a means of preserving or developing their skills when they are not productive for Defence. For example, the difficulty in preserving paramedic skills during peacetime perhaps could be resolved by a reverse Reserve workforce where Regular medical personnel were embedded within the Ambulance Services until needed for operations, with a concomitant benefit to the NHS and society at large. Alternatively, a form of cross Government Sponsored Reserve arrangement working in the public sector could help improve workforce productivity. Amongst other areas in which a Reverse Reserve arrangement might work, policing, capacity building through local government and in engineering (civil and equipment) with industry contractors would be worth investigating, building on the air traffic model adopted by the National Air Traffic Service.

Conclusion

Placing flexibility at the heart of Royal Air Force strategy requires balanced change across Structure, Process, People and Reward domains, all of which have to be aligned towards the same strategic goal. This paper has considered changes within the structural and process elements and has advocated greater use of cross-functional teams with diversity at their heart. It does not seek a radical overhaul of all elements of the Service because the ADM allows both for bureaucratic elements and (wider use of) the adhocracy.

The ADM reconceives the Royal Air Force in such a way that it expands the scope for innovative groupings of the Whole Force in delivering outputs. There would still be a strong role for regular personnel adopting the current model of developing talent from within, but this is likely to be most prevalent in the heart of the Operating Core and Middle Line. Within these components, the paper advocates a rethink about the nature of the flying squadron as the nucleus of Royal Air Force capability, arguing that the squadron needs to be elevated above that of the station, with a concomitant investment in the squadron as adhocracy and disinvestment in the station. The Techno-structure, Support Staffs and Strategic

Apex would be more diverse in their mix of Regulars, Reserves, contractors and other partners as diversity of views in these areas would help inspire innovation and deepen essential skills that the baseranked system currently struggles to deliver. Lateral entry would be possible, as would more flexible ways of working to harness the strengths of the various parts of the workforce.

Large parts of the Operating Core and Middle Line may remain unaltered, however, where structural changes are needed in the Techno-structure, Support Staffs and Strategic Apex, new processes should follow. Perhaps the most challenging process issue at the moment is providing a robust Lessons Process that can capture the last decade's worth of experience amongst our senior operational commanders so that those who find themselves leading operations without ten or more years of practical experience can access the learning of their predecessors – the Royal Air Force needs to become an agile learning organisation.³²

Investing in flexibility is expensive as the costs of managing the friction and developing the agile warriors of the future will rise. Alternative employment models may help mitigate the costs, but it is likely that a strategy of flexibility will only be financially viable with a further reduction in volume across the Regular Component and more capability being moved into the Reserve and held as a contingency. A Core/Periphery Model may enable this, with a smaller number of Regulars at the Core around which more of the capability (mass and specific skills) would be held in an expanded group of partners, including Reserves, contractors, academics, civilian experts etc. In many respects, the ADM represents an evolution of the Whole Force Approach, but in a more organic form that provides for greater differentiation within the various components comprising the Core and Periphery. Within this, there is a need to rethink how the Royal Air Force can derive maximum benefit from the Reserves. This needs to be more than just trying to squeeze increased numbers into the existing branch and trade structure and a more innovative solution is advocated in which the Reservist's civilian skills and experiences are leveraged, potentially holding entire capabilities in the Reserve component that have no equivalent in the Regular Force. The paper also argues for a more fluid interpretation of Reserve that could dispense with the need for them to be uniformed at all, and/or encourage a 'Reserve as Consultant' model. However, the ADM itself needs to remain adaptive to the changing circumstances in which it operates.

However, merely attending to structure and process will not develop the Royal Air Force into a strategically agile organisation. A flexible organisation looks like its surroundings, which means that its structure and processes must be contingent. Preserving the potential to change quickly, therefore, resides in the people component; the organisation's capacitors. This requires an investment in human capability to ensure that the people are willing and able to adapt quickly to meet the organisation's challenges. The people dimension is considered in Part Two.

Notes

- ¹ 'A Strong Britain in an Age of Uncertainty: the National Security Strategy' (October 2010). HMSO at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61936/national-security-strategy.pdf (accessed 18 March 2015)
- ² Future Character of Conflict (FCOC) Paper, Defence Concepts and Doctrine Centre, 3 February 2010 p.35 at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/33685/FCOCReadactedFinalWeb.pdf (accessed 18 March 2015),
- ³ What Professor Cornish calls 'muddling through'. Conversation with the author, 11 November 2014. See also Cornish & Dorman, (2012). 'Smart Muddling Through' in *International Affairs*, Vol.88(2) at pp.213-222.
- ⁴ Defence Concepts and Doctrine Centre, Joint Doctrine Publication 0-01. UK Defence Doctrine, at p.31.
- ⁵ M. Finkel (2011). On Flexibility: Recovery from Technological and Doctrinal Surprise on the Battlefield at pp.73-97.
- ⁶ P. O'Neill (forthcoming). 'Driving Flexibility through People: Harnessing Human Capability', will consider HR practices for the regular component in more detail.
- ⁷ B. Jenkins. (1970) *The Unchangeable War*. at p.3.
- ⁸ R. Downie. (1998) *Learning from Conflict* at p.230.
- ⁹ J. Galbraith (2014). *Designing Organizations: Strategy, Structure and Processes at the Business Unit and Enterprise levels* at p.19.
- ¹⁰ Galbraith, *ibid.*, at pp.20-22. A strategy of flexibility is likely to have greater longevity than one seeking a specific competitive advantage but, as the German experience of World War Two shows, even flexibility can be derailed by individuals, such as Hitler's centralised decision making process once he lost confidence in his generals.
- ¹¹ H. Mintzberg. (1983) *Structure in Fives* at p.11.
- ¹² A. Sinno. (2008) *Organisations at War in Afghanistan and Beyond* at pp.59-60.
- ¹³ Mintzberg, *ibid.*, at p.268.
- ¹⁴ C Schoonhoven & M Jelenik. 'Dynamic Tension in Innovative, High Technology Firms: Managing Rapid Technological Change Through Organisational Structure', in Tushman & Anderson, *ibid.*, at p.240.
- ¹⁵ Sinno, *ibid.*, at p.50.
- ¹⁶ J Baker. (1996) 'Agility and Flexibility: What's the Difference?' *Cranfield School of Management* at p.3.
- ¹⁷ Galbraith, *ibid.*, at p.140.
- ¹⁸ R, Miles et al. (1978) 'Organisational Strategy, Structures and Process'. *Academy of Management Review*, Vol.3(3) at p.555.
- ¹⁹ See for example S. Ellard. (2007) 'Are the Experiences of the RAF Servicing Commandos During World War Two Relevant to the Support of Current RAF Expeditionary Operations?' *RAF Historical Society Journal* Vol.39.
- ²⁰ D, Ucko, (2009) 'The New Counter-insurgency Era'.
- ²¹ Ucko, *ibid.*, at pp.152-156.
- ²² E, Shamir. (2011) 'Transforming Command' at p.32.

²³ J. James. (1991) *The Paladins* at p.100.

²⁴ S. Corum. (1992) *The Roots of Blitzkreig* at pp.183-184.

²⁵ Adopting a European model whereby the RAF operated from mixed civil/military bases could help with sharing infrastructure and base support costs and deliver savings in the long-term, although there would be costs in transition that could make such an approach unaffordable in the short term. RAF Aldergrove provides an example of how a military enclave can operate as part of a civilian airport.

²⁶ Galbraith, *ibid.*, at p.37.

²⁷ W. McNeill (1983). *The Pursuit of Power*, at pp.251-252.

²⁸ AP3003. (2004) 'A Brief History of the Royal Air Force' at p.52.

²⁹ Corum, *ibid.*, at p.69.

³⁰ The Reserves are an eclectic mix of contracts, ranging from full-time Reserves, to those who are only activated (mobilized) to meet particular organisational needs, and a multitude of types in between. For the sake of simplicity, the following paragraphs refer to those individuals for whom the work for UK Defence is not their primary activity, such as those in the Army Reserve and its equivalents in the Royal Navy and Royal Air Force.

³¹ Sir J Kiszely. (2007) 'Post-modern Challenges for Modern Warriors'. Shrivenham Paper No.5 at p.10.

³² The cultural and educational aspects of becoming a learning organisation are addressed in the second paper 'Driving Flexibility through People: Harnessing Human Capability'.

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Delivering Flexibility through People: Harnessing Human Capability

By Group Captain Paul O'Neill

This is the second of two papers arguing for greater organisational flexibility in the Royal Air Force. Necessarily broad in scope, they consider the consequences of a systematic move towards a strategy that prioritises flexibility against the components of Kenneth Galbraith's Star Model. Whilst the first paper focused on structures and processes, this one considers the people and reward implications of becoming more flexible. It continues the theme of challenge in order to provoke debate in the Service, and takes as its starting point the need for greater diversity and differentiation in the workforce.

This paper proposes some new approaches to recruitment, talent management, education and reward systems so that the RAF can attract, incentivise and develop the people it needs for the future. It argues for a greater emphasis on talent management and professional military education beyond the Executive Stream, with a greater focus on the non-technical skills that underpin flexibility, such as learning how (rather than what) to think, problem solving and how to manage conflict so that its creative value is exploited. Finally, it talks about the challenges of organisational culture and how this has to be changed if a new strategy is to be embedded in the RAF's DNA. Whilst the paper supports the current focus on human capability, it cautions that it needs to complement appropriate investment in the RAF's physical and conceptual components.

Introduction

Given the uncertain but wide range of tasks that the Royal Air Force may be called on to address in the future and its increasingly limited means, flexibility in facing the specific task at hand will be crucial to success on future operations. A move towards greater organisational flexibility demands action across the Services' structures, processes, people and rewards. An earlier paper¹ described some choices for structural and process change, focused on the development of an Adaptive Design Model (ADM) that incorporated elements both of bureaucracy and adocracy in the various parts of its structure. It also argued for an expanded role for the Whole Force Approach, most specifically the Reserve component. Structures and processes, however, can only ever be contingent, solidifying to match the environment at any given time, but retaining the ability to morph when that environment demands something new. The capacity to adapt contingent structures and processes, therefore, derives fundamentally from the Service's people.

This paper seeks to further the debate about what flexibility should mean, this time for the RAF's people. It examines the people and reward areas in the context of a strategy seeking to maximise flexibility at the organisational level. Diversity is still at its heart, not merely in those characteristics protected under employment legislation but difference in all its forms is crucial to operational success because only by seeing issues through many different prisms can a proper understanding of the world be obtained.

Diversity must be accompanied by differentiation: a 'one-size-fits-all' model cannot respond appropriately to the disparate demands of the different parts of the organisation or its more diverse workforce(s). However, diversity and differentiation make the organisation's support requirements more complex and require sophisticated Human Resource (HR) policies. Different parts of the structure require differentiated HR policies for selection, talent management, development and reward. This complexity demands better systems for skills tracking, not just amongst the core, Regular, component, but the hitherto peripheral elements of the workforce, such as Reserves and other partners. This starts with a common lexicon for capturing the contacts, knowledge, skills, experience, competences, and then demands an information system that can hold and manipulate records more effectively than the current e-HR system (JPA).

Diversity needs to exist within the different parts of the organisational structure too. This individual-level diversity requires moving beyond the 'all of one company' approach that underpins so much of the RAF's HR thinking, and has to recognise and reward the value brought by individuals. This means empowering and valuing our airmen, NCOs and mainstream officers and investing more in them and their contribution (the vast majority of the Service) rather than the traditional focus on a small group of the most talented officers destined for the most senior ranks. A radical shift in HR thinking is needed to move from policies based around the management and reward of inputs towards those that support the

organisation's desired outcomes. This will be unsettling for many as it is counter-cultural to the current approach that values uniformity, role clarity and predictability. If the paradigm can be changed, however, it would maximise the Service's human capability advantages and unleash the potential of a highly trained and committed workforce. Moreover, it would help ensure that personnel activities were configured in such a way as to maximise the transformational value they bring to the organisation.

People

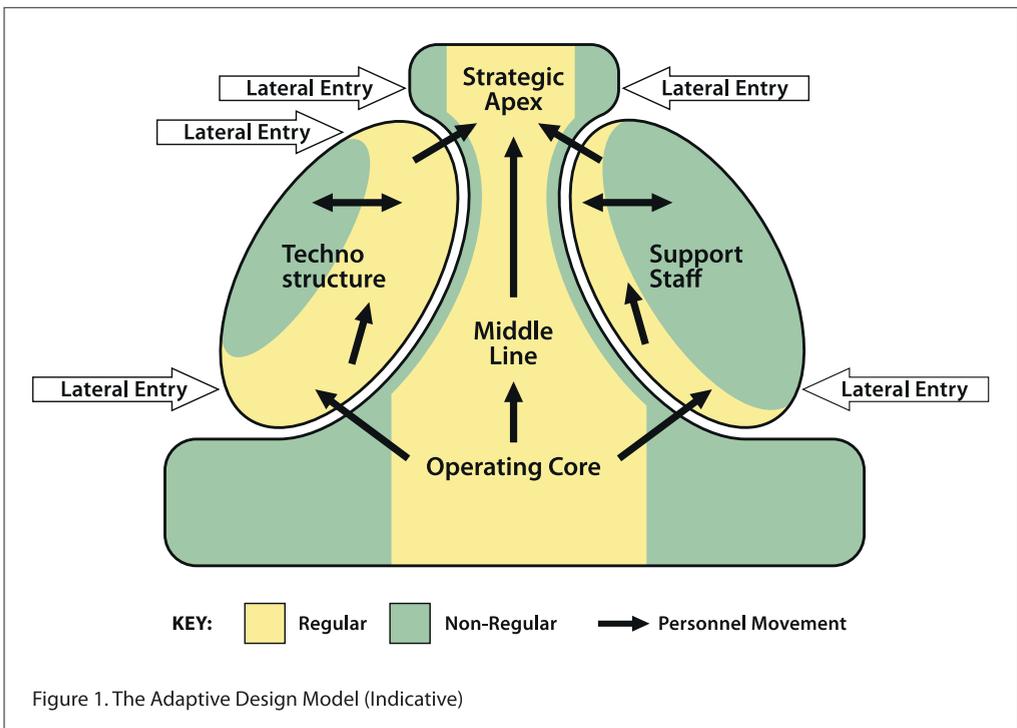
As the Royal Air Force has rightly recognised, people are not only crucial to its outputs but, under current planning assumptions (Future Force 2020), represent the best chance of securing a competitive edge in future conflict. A strategy that demands flexibility inevitably requires people who themselves are adaptable and comfortable with change. The strategy needs to foster a sense of creative tension and be able to accommodate different worldviews, especially where it is operating internationally. Consequently, a culture of flexibility requires a concerted investment in diversity. The challenge for the organisation thus becomes selecting, developing and using its people in support of the strategy, including accommodating those who will challenge its own orthodoxy. Wright and Snell identify three elements in delivering flexibility through people: 1) developing HR systems that can be adapted quickly, 2) developing a human capital pool with a broad array of skills, and 3) promoting behavioural flexibility amongst the workforce.² This is not just a question of talent, although organisations clearly need people with the right skills, but also the right mind-set and behaviours. The organisation, therefore, needs a way of identifying, developing, and implementing changes in recruitment, selection, development (education/training and career/talent management), rewards and exits to meet the new requirements quickly. A difficulty is that new strategy has to be delivered by a workforce whose recruitment and development was based on earlier, potentially redundant, requirements.

Recruitment and Selection

Recruiting and selecting people with the right approach and cognitive skills is more important than their technical skills, not least because it is impossible to know what technical skills are needed in an unpredictable future. In small forces, such as the RAF, it is impossible to hold within the regular component all the possible skills in sufficient mass to meet future scenarios. It is equally impossible to ensure that everyone in the organisation is broad enough to possess all the skills they may ever need.³ The RAF will either have to bring the skills in as and when it needs them, or invest in developing the skills of its existing workforce on a 'just in time' basis. The former approach demands greater ruthlessness in shedding people with redundant skills to make space for those with the right new skills, which would undermine an important part of the psychological contract; generous job security represents part of the organisation's 'offer' in response to the unlimited commitment Service personnel make. Alternatively, training and education becomes vital, but brings with it considerable cost, including lost opportunity costs for the time people are taken from their normal duties.⁴ The Reserves could contribute to resolving this conundrum as it may be possible to hold a

greater part of the Services' contingent skills in the Reserves, to be mobilised only when their skills are needed.

Recruitment and selection in the military is unusual: the Services tend to recruit at the base rank and promote from within, unlike commercial organisations that bring people in at every level of the hierarchy (lateral recruitment). The UK military has traditionally chosen not to adopt lateral recruitment widely, largely based on a (challengeable) contention that military experience at a lower level is essential to those operating at a more senior rank.⁵ Whilst there is undoubtedly a correlation in technical skills between the tactical and operational levels in the Operating Core and Middle Line (as Mintzberg might define it), the skills required at the Strategic Apex, Techno-structure or Support Staffs are not mere extrapolations of those learned at the start of a career. Tactical or even operational brilliance is no guarantee of career success at the strategic level and recognising this discontinuity in skills between the operational and strategic levels⁶ could open the door to some lateral recruitment to the Techno-Structure, Support Staffs and Strategic Apex (what might be termed the 'organisational space') without compromising military operations, perhaps even enhancing it through the diversity and wider talent pool this could bring – see Figure 1.



Legitimate arguments against lateral recruitment within the organisational space do exist, based either on the need to provide career-broadening appointments for those uniformed

personnel who will rise to the top or where prior military skills are not needed it is generally cheaper not to employ a regular Service person given their higher employment costs. These arguments, however, do not invalidate the idea of lateral recruitment, but may open the organisational space to greater diversity of input, and enable a more permeable membrane between regular and non-regular workforces in the ADM as part of a 'Core/Periphery Continuum' with varying degrees of commitment, readiness and employment cost.

Talent Management

Too often, discussions about talent management end up focusing on the senior, usually commissioned, ranks and either ignoring or under-playing the potential contribution of the majority of the Service. The RAF's talent pool is not restricted to those destined for the highest ranks alone, and today's airmen and women represent a highly talented and educated cadre from whom more value could be derived.⁷ The 'talent' will be different in each individual, but talent management is not (or at least should not be) an exclusively officer sport. The approaches adopted by the Reichswehr under Hans von Seeckt and the RAF under Lord Trenchard in the Inter-war years were more inclusive, and saw significant investment in the non-commissioned cohort. The starting point for effective talent management is to understand the nature of the talents needed and how they differ in different parts of the structure. Once it knows what it wants, the organisation needs to create a management culture that recognises and employs those talents because experience is pivotal to engendering flexibility: career and talent management approaches need to be mobilised towards developing adaptability.⁸ However, the RAF's complexity is such that the concept of standard career paths is ill-suited to engendering flexibility. The myth of a monolithic organisation needs to be exposed, enabling more nuanced and targeted HR policies to reflect the different needs of the RAF's different components, which the ADM argues needs to acknowledge the structure's dual stable/agile nature.

Differentiation is essential to effective management of the people component, and there are issues with the current approaches to talent management, including: the point at which the talent is identified; the tension between the demand for generalists or specialists; tour length, and; the problems and benefits of standardised career paths.

Identifying Talent. Before talent can be nurtured and managed, it needs to be identified, which requires a clear understanding of what talent the organisation wants. The nature of the desired talent will differ depending on the nature and part of the organisation in which the individual is employed. The Strategic Apex will inevitably be affected by the nature of the organisation it is leading⁹ as it has to provide what the other parts need to perform. In a machine bureaucracy, the most important area is the Techno-structure as it provides the structure and processes that underpin successful delivery of the organisation's outputs; the Great General Staff from the Prussian Army and Reichswehr is a good illustration of this. Conversely, in an Adhocracy, the crucial component is the Support Staffs as it is they who deal with the conflicts and friction that organic structures generate.

Aside from its substantive nature, talent can also be manifest (that which is evident in how people perform) or latent (potential that is not yet displayed). The former is easier to identify and can be captured by the appraisal system, but latent talent (potential) is harder to detect. Amazon uses four criteria for predicting potential: curiosity; insight; engagement and determination,¹⁰ none of which are formally assessed in the military appraisal system. Moreover, the Services' strong homogenising tendencies means that appraisers may assess others based on pre-existing stereotypes and, if the subject of the appraisal reminds the appraiser of others in the organisation who have been successful, they are likely to be rewarded. Proper training of those appraising others is crucial if genuine talent is to be identified early so that it can be managed to greatest effect.

Talent Management. Individual skills need to be matched to the demands of whichever part of the organisation has the greatest need for those skills. This places a premium on the skills of those engaged in talent management given the complexity of the role, and requires a move from talent management as process-adherence to a more organic approach¹¹ in which career managers would be less like machine operators and more like gardeners working in harmony with the wider organisational environment as it changes. This would enable a more rigorous focus on the organisation's needs and provide innovative paths to getting the right people, into the right jobs at the right time. There is a sense that career management is too process-oriented: in a flexible organisation, processes are contingent on the needs of the organisation at any given time rather than immutable laws demanding rigid adherence. It is easy to understand why career managers wish to follow a process, even where it leads to the wrong answer, because process-compliance provides protection from criticism, and the majority of the RAF's grievances are linked to career management decisions. This vicious circle, in which the process that leads to the wrong decision paradoxically is the best protection afforded to a career manager when a complaint is made encourages greater adherence to the process that can only be broken if the protection offered to the career manager comes from the organisation rather than the process. Innovation and prudent risk-taking in talent management, therefore, requires changes to the organisational culture.

The assumption of an unbroken line of skill development from the tactical to the strategic level, as well as driving a view that opposes lateral recruitment, also drives a linear approach to career development; individuals have to perform at each preceding rank before being considered for the next. This slows individual progress through the organisation and often fails to get people into the right jobs early enough in their careers to deliver the maximum benefit. The two-year posting cycle for those in the Executive Stream is driven by this linear approach to career management, with all of the problems that short tours bring (see below). In the case of those whose talent is suited to the highest positions within whichever part of the organisational structure, pushing them into bigger jobs with more staff or responsibilities undoubtedly continues their growth, but it does not necessarily accelerate it;¹² these individuals need to be challenged in new environments, including academic study and

secondments outside Defence. Skipping ranks could provide a vehicle for accommodating essential broadening opportunities without compromising individual career prospects.

Generalist or Specialist? In a closed employment system, such as that of the military where lateral entry is limited, the question of whether to prioritise generalists or specialists is difficult. The military system currently favours generalists who have proved themselves in a wide range of roles. Theoretically, therefore, those who rise to the top have a broad enough understanding to manage the Service. In a career of perhaps thirty years, however, this drives a high rate of churn given the number of ranks and jobs that those destined for the top need to 'survive'. However, genuine flexibility depends on properly understanding a situation, often when deep functional expertise of different specialisations is brought together, ideally within ad hoc structures as the problems are generally multifaceted. This means that the RAF needs both generalists and specialists, with each having a distinct part to play in delivering the strategic goal. Streaming people as generalists and specialists, and sub-dividing the specialists by employment area provides one way of cutting this 'Gordian knot' but, having done so, both groups deserve access to the education and reward systems that make most effective use of, and value, the contribution each makes – in this latter regard more work is needed to ensure that specialist talent is properly valued. The RAF's Senior Officer Study Period is a start, but falls some way short of the aspiration in the 2009 RAF Officer Career Management Review,¹³ which envisaged a longer foundation programme linked to the professional development requirements of the Employment Fields. The signs that the New Employment Model will restore the sense of value in being a Specialist (not even acknowledged as such by the RAF, which prefers the term 'Mainstream', out of which the 'Executives' are lifted) are not encouraging.

Tour Length. Tour length is a crucial factor in harnessing talent as individuals are rarely fully effective immediately on appointment to a new job. Katz identifies three stages in how individuals adapt to their appointments. The first is Socialisation, where the individual learns about their role, its boundaries and dependencies and is consequently at their most malleable. After this comes the 'Innovation' Phase when, having made sense of their environment, they can focus on improving performance and accomplishment; they are less malleable but more likely to make individually driven changes. The final stage, reached after a 'considerable length of time' sees 'Stabilisation', where the individual becomes stale and often inflexible.¹⁴ The process by which people are moved from job to job can ensure that people remain open to innovation, but moving people too early means that they may not understand, or be concerned about the consequences of change. Short tour lengths means that personnel often spend a large proportion of their time in learning the new job (Socialisation) and are moved on whilst still at a point where they could innovate further, probably better informed of the consequences of their innovation and with a depth of experience to make a real difference to what are often complicated, or even 'wicked',¹⁵ problems incapable of resolution within a two-three year posting cycle. As a consequence, '[m]any highly technical staff positions are viewed as good 'broadening' assignments for operators who rotate through them so rapidly that they

derive limited developmental benefit, and desired strategic outcomes become almost impossible to achieve'.¹⁶

Slowing down the speed of assignments amongst senior leaders would deepen expertise, increase accountability and reduce the risk of the next post incumbent changing direction before any benefits of the change were realised; Jack Welch (CEO of General Electric) claimed it took him 15 years to make a difference as a CEO; 5 to learn the job, 5 to produce genuine change and 5 to institutionalise the changes.¹⁷ This is perhaps an extreme position, and Katz argues that team performance is generally optimised between 1-4 years, tailing off gently after five years before falling away sharply after seven years.¹⁸ Both cases suggest, however, that the current tour length is too short and lengthening assignments would free individuals *'from the necessity of demonstrating their competence in a very short time, and of appearing to avoid any mistakes . . . [whilst] the environment [would be] a far more congenial and productive one where there was room and time to try some innovative approaches without risking all should some not be successful'*.¹⁹ Streaming provides a significant opportunity to increase the tour length for the specialists whilst allowing the generalists to continue broadening, enabling the specialists to provide the deep expertise and continuity essential to addressing the more intractable problems. The position for senior leaders may need a different solution, such as the ability to skip or accelerate through ranks, perhaps by removing for the very best the need to demonstrate competence in both command and staff appointments.

Career Paths. Standard career paths represent industrial/mechanical age thinking and erode flexibility; they are neither responsive to individual skills nor changing organisational needs. These paths often tend to homogeneity as they shape individuals in remarkably similar ways. Finding alternative paths for key individuals, either in the Techno-structure, Support Staffs or for those destined for the Strategic Apex, would pay dividends, including secondments to industry, academia, third sector etc. Growing senior operational commanders during a protracted absence from combat operations could be assisted through secondment to UN operations, major Government projects or working in the third sector for development charities as a way of providing some of the project management skills required in operational planning. In light of the advantages of personnel in the Strategic Apex serving longer, it could be beneficial to accelerate selected individuals through their early tours. Identifying those with the greatest suitability for senior leadership early in their careers would allow rapid promotion through the junior ranks such that they reach senior rank early enough for tour lengths to be extended without detriment to overall career progression. This would be a very small subset of the Executive Stream, perhaps only the top 1-3%, but this makes retention of these individuals even more important.

If streaming is accepted as a means of differentiating, then it also follows that the streams will follow different career paths. This position then allows different means by which personnel may pursue the career. Inevitably, the Service will wish to have considerable control over the careers of those it is grooming for the most senior position, but for others such control would

be less important. Allowing individuals in the latter group to apply for jobs gives them control over their own destiny and reduces the workload on central career managers. Individuals with a positive promotion recommendation would be eligible to apply for posts at the higher rank, and appointment to the job would thus bring with it promotion. Such an approach would also give the chain of command the opportunity to select their team in a manner than takes account of interpersonal dynamics. Some central control would be needed to deal with those who were unable to secure future appointments, which might be done by ensuring the ability to appoint them to a position, or to exit them from the Service should they be unable to find suitable positions.

Education

“Training is about the “how”; education is about the “why” or the “what.” ... Training, in other words, is an activity limited in time, with a clear end determined by the ability to perform the tasks in question... Education ... focuses on why an action may be necessary. It is about the purpose of that action, rather than simply about its mechanics. An educated individual is one who possesses the ability to judge the importance and rectitude of an action; a trained individual has the skills to perform it.”²⁰

Having adaptable training and appropriate doctrine is widely recognised as being necessary to supporting flexibility²¹ but, like other areas of the Support Staffs, this area has often been cut in order to ‘preserve’ the front-line, even though in the longer-term it may have the opposite effect. This could be a particular problem if more contingent capacity is held in the Reserve or in partnerships and will need to be harnessed/deployed to meet emerging needs. Despite training’s crucial role, however, this paper focuses on education because ‘*you train for certainty, you educate for uncertainty.*’²²

Education’s importance in promoting flexibility has received prominence both in the US and UK. The 2010 report of the United States House Armed Services Committee (HASC), *Another Crossroads? Professional Military Education Twenty Years after the Goldwater Nichols Act and the Skelton Panel*, stressed the need for Professional Military Education (PME) to “continuously evolve in order to imbue service members with the *intellectual agility* [emphasis added] to assume expanded roles and to perform new missions in an ever dynamic and increasingly complicated security environment.”²³ However, it is necessary to get behind the sound bite and ensure that the education offered contributes to the strategic intent. What this means will depend on the organisation’s structure, which part of the structure the individual works in, and the processes and doctrine that are adopted. Of equal importance is to widen educational access; it must be more than just about the Strategic Apex. The Reichswehr invested significant amounts both in the General Staff that comprised its Techno-structure, and its SNCO cadre. The UK Defence Leaders’ Training Education Review examines what skills the senior leadership needs, but is limited because it makes no assumptions about the nature of the organisation that the Strategic Apex is leading, and has limited its scope to the education offered from OF5 and above.

Kelley & Johnson-Freese have criticised the current state of PME in the United States by claiming that many institutions are too focused on technical education and tactical skills to achieve the flexibility sought. Although the specifics are different between the UK and US, the demand for immediate and demonstrable relevance from education is common (not least amongst budget staffs who demand value for money), and there are constant pressures to fill periods devoted to thinking time with substantive subject matter that 'proves' students are busy learning. As a technical Service, the RAF is particularly prone to a focus on technical skills, yet an organisation whose *raison d'être* is change can rely less on this than life skills, such as team working, how to learn and think (including inductive reasoning), problem solving and handling conflicts.²⁴ Whilst there is a need for technical training, there needs to be a shift in PME towards the generic skills an organisation needs in its personnel, which will be different across the different components of the structure – currently, the majority of the investment in higher level education is aimed at those in the Middle Line aiming to enter the Strategic Apex, but these people represent a small fraction of the overall workforce.

Of further concern is the tendency to provide the vast majority of PME through means that limit exposure to significantly different ideas or ways of thinking; even higher level academic learning is delivered in largely closed cohorts of like-minded students with academics who are generally well-disposed to the military. A military that educates itself may not be as effective in developing creative thinking and innovation, whereas exposure to external academic institutions and a plethora of ideologies, some of which may reject the very basic assumptions inherent in the military culture,²⁵ may prove more effective at developing the critical skills which are necessary to support flexibility in the different parts of the organisational structure. Partnerships with academic institutions do exist through Fellowship Programmes run by the Directors of Defence Studies who place (almost exclusively) officers on civilian academic programmes, but the number of places is very limited and too often the time taken to study is seen by line and career managers as being detrimental to a career and something to recover from rather than as integral to the individual's development and a way of expanding the organisation's human capability.

PME can play an important role in building wider networks or partnerships by supporting the creation of cross-functional teams. Notwithstanding earlier criticisms about the technical and self-referential nature of PME, the existing advanced and higher level staff courses, and the Royal College of Defence Studies, provide excellent opportunities for selected officers to build relationships that will pay dividends later in their careers. However, the length of the courses makes it difficult to involve external partners and Reserves, and there is a need to consider how PME could be made more accessible to those outside the military's Regular component so that networks can be expanded. The more bite-sized training and educational opportunities being developed for the Reserves could be extended to Defence's external partners as a way of building the trust needed to turn 'contacts' into meaningful collaboration, but this has cultural implications. Rather than being 'Regular-lite programmes', the courses developed for the Reserves could become the vehicle for building the wider partnerships

an agile organisation needs to succeed, and Regular personnel need to attend these programmes so that the links are forged across all elements of the Defence workforce and partners.

Currently, investment in PME is too skewed towards the minority identified as having the potential to reach the Strategic Apex. Flexibility demands educational opportunities that are broadened so more people are provided with access; the difference in educational attainment in the officer corps between the US and UK Armed Forces is noticeable, with a much greater emphasis given to the value of external academic study in the US. Within the ADM, education needs to be rebalanced towards those in the adaptive component, and delivered in a way that best supports the cross-functional nature of future working. Personnel working in the Techno-structure and Support Staff have crucial roles to play in supporting flexibility, yet this is not adequately reflected in the availability of educational opportunities. Career streaming can, and should, look to expand the scope of PME and external education to capture those whose expertise will be increasingly important in support of the future strategic leaders. Even in the Operating Core, although it is likely to remain a Machine Bureaucracy, the non-commissioned officers need appropriate education if they are to be the Strategic Corporals envisaged for the modern battlefield.²⁶ This suggests that even the Operating Core may need to be less bureaucratic and more innovative in future, but this could have profound cost implications that are 'unaffordable': affordability is, however, a statement of policy choice and Defence will have to decide how much it is willing to pay for its people, which may drive it towards a high end/high cost component and a low skill/low cost cadre if it does not wish to reduce volume further or pay to retain individuals who are likely to be in demand by other employers.

Whilst this section has focused on PME, education should be seen as more than just formal interventions, and needs to include the educational opportunities available through individual appointments as part of their career. The US Army in the interwar years recognised this, even defining its officer manning priorities as: 1) Army Staff; 2) Army War College Faculty; 3) Command and General Staff College Faculty; 4) Operational troop units. Despite the post-conflict drawdown in 1918, the uncertainty of the threats facing the US and fiscal constraints, the US Army refused to compromise on officer education, as these professionals would form the nucleus of a mobilised army.²⁷ UK Defence is arguably in the same position in which it needs to preserve a core capability of well-educated, agile warriors around whom they can build as circumstances demand. Moreover, educating the workforce through career management combines education with outputs, reinforces the learning by moving it from the abstract to the concrete and provides a sense of reward.

Rewards

Rewards. Rewards refer to the extrinsic elements of remuneration, promotion and recognition, and intrinsic factors such as job challenge, self-esteem and self-actualisation.²⁸ Extrinsic rewards are more easily managed by organisations, because the value attached

to intrinsic rewards is unique to each individual. However, many commercial organisations now consider the value of the intrinsic component under Total Reward Packages that seek to incentivise desired behaviours using a mixture of extrinsic and intrinsic approaches.

Extrinsic Rewards

Remuneration. Organisations need to have a clear idea of what their remuneration strategy is trying to achieve, both with reference to the external environment so it can attract and retain the talent it needs, and looking inwards so it can promote behaviours that are aligned with what the organisation wants. The current Defence remuneration model appears to lack a clear strategy: it remunerates, but follows rather than leads behaviours. Consolidated pay is at its core (approximately 90%), with allowances and other financial incentives providing limited scope for tailored packages, but it is not adaptive enough for the uncertain future being faced.

Pay. Pay is largely based around rank with seniority in rank rewarded through annual increments. There are some specialist pay scales, but the principle is largely one that those of more senior rank are paid more than their subordinates. This model supports longevity and is underpinned by the prospect of promotion to those who perform in accordance with what the military measures. It is a largely industrial age model that prioritises inputs rather than outputs and is ill-suited to flexibility. With a smaller force, but a desire to operate across a full spectrum of capability, it is likely that more niche capabilities will be needed, which are unlikely to offer the promotion prospects that will retain individuals if their skills cannot be remunerated appropriately. Moreover, career streaming that creates specialists for whom promotion prospects are likely to be less than for the generalists being groomed for the most senior ranks needs to be developed alongside a mechanism that can reward the value people actually bring to the organisation even without higher rank. A more sophisticated pay model is needed, one that can reflect an individual's worth or value, not merely their rank, if a strategy of flexibility is to be supported properly. The New Employment Model is attempting to address some of the issues with the current approach, but whilst the intention is to allow four pay bands for Other Rank pay instead of the current Higher/Lower bands, it does not extend into the officer cadre, nor does it fundamentally revisit the relationship between rank and individual skill or value.

A new, differentiated, pay model could be conceived as a graphic equaliser in which pay and allowances are turned up *and down* across a range of factors relevant to individuals/cohorts.²⁹ For this to work, however, a significant cultural change is needed in the organisation, one that allows for greater differentiation and complexity in the internal processes. It would also require placing the organisation's needs at the heart of HR; the Services have often moved trades to a higher pay band even where this was not demanded by job evaluation scores or problems in recruitment/retention. A harder nosed attitude to people management is needed, one in which pay for some might have

to mark-time to allow investment in another area/skill that is of greater value – there may have to be losers in pay reform.

Allowances. In the allowances arena, one manifestation of a new approach could be adopting a flexible benefits model for non-compensatory allowances. Personnel would be entitled to a predetermined level of benefits and allowed to select from a menu of options that best reflected their needs. Where expensive benefits were preferred, the individual would have to meet the extra costs. This approach would change the nature of the relationship with the workforce, giving them greater control, and could support improving the non-financial offer, but in the short to medium term would erode the financial offer, especially for those entitled to the more costly allowances. One difficulty with embracing this concept at the current time is how few allowances would fall into the menu benefit category, which suggests that the current offer is generous in comparison with other employers. A more financially constrained environment may require a reduction in the overall allowances budget, which might be made more palatable if done at the same time as individuals were given more choice over how they wanted to spend a smaller 'pot'.

Promotion. Within a hierarchical structure in which rank very overtly carries status, promotion is a highly visible sign of what it is that the organisation values, even though in many cases people are promoted out of what they enjoy and are good at into managerial or coordinating roles - for the dangers of which, see 'intrinsic rewards' below. The current promotion system across all three Services strives to be fair, and is largely successful at this on its own terms. However the criteria applied to promotion are generally quite rigid, with the expectation of a minimum number of years and appointments in each rank (often following a standard career path) before the individual is eligible to be considered by a Promotion Board. If senior leadership is key to change, a model that takes upwards of twenty years to get innovators into the right posts, even assuming that they have not become so institutionalised that they are unable to recognise the need for change, means that a strategy of flexibility is a long-term process. If we accept the inevitability of the current model, aspirations for true flexibility need to be set against a twenty years programme, with an immediate focus on shaping the careers of junior officers who will be the pool from which the seniors of tomorrow will be selected.³⁰ However, the current model is not immutable. It is possible to change the promotion system to allow those with the right knowledge, skills, experience and behaviours to skip ranks or seniority to get them into the right places and accelerate the process; General George C Marshall rose from 1* to 4* in three years, and was 34th on the seniority list when he was made US Army Chief of Staff, by President Roosevelt who recognized in Marshall the talents he needed for the role. Promotion, however, is dependent on the appraisal system and what it measures.

Appraisal. The appraisal system is one of, if not the biggest driver of behaviours because it governs the promotion system. The appraisal system's efficacy, therefore, depends on,

amongst others, the criteria against which individuals are assessed, the accuracy of those writing the reports and the period over which assessments are made.

Appraisal Criteria. To succeed, individuals have to demonstrate performance against those characteristics in the appraisal form, and their potential for higher rank. The characteristics differ depending on whether the subject is enlisted, an officer up to 1* or a Senior Leader (2* and above), but none of them explicitly focuses on flexibility or the skills that are widely recognised as essential for flexibility such as intellectual agility,³¹ inductive reasoning, problem solving or handling conflict. Moreover, the quest for commonality of criteria within each group and across all three Services fails to acknowledge the different requirements of the different parts of the organisation. Whilst some consistency is needed to enable appointment and promotion decisions to be made, the focus on such a limited set of skills drives diversity out of the skills base. The New Employment Model is reviewing the appraisal criteria to better reflect knowledge, skills and experience, but behaviours also need to play a part if what the Services profess to value is to be recognised properly and rewarded. Moreover, a different but still single set of criteria would fail to acknowledge the heterogeneity needed in the different parts of the organisation.

Reporting Accuracy. A potential weakness for an organisation that seeks diversity and flexibility is the power afforded to the reporting officer, whose subjective assessment may be based on an individual (probably unconscious) bias towards those who the reporting officer believes fits the organisation's mould. This carries significant risk, as *'it is highly desirable, even essential... that the more influential members of a general's staff not be too much like the general'*.³² Moreover, within any alphanumeric reporting system, there is a tendency for reporting officers to inflate performance grades, often reflecting loyalty to those on whom the person reports and, occasionally a disinclination to alienate staff with whom they have to work in future; the military is no different. In 1941, the US Army removed thirty-four of their forty-one Corps and Divisional Commanders based on performance in field exercises, despite the fact that 'most had received glowing efficiency reports'.³³ This is not just a historic concern; in 2013/14, over 75% of the RAF was graded as above average.³⁴ The need to score highly to remain in the career race can encourage a belief that satisfying a reporting officer is more important than meeting the legitimate needs of those working for them. Adopting 360-degree appraisal, especially for those destined for the most senior ranks or in important positions in cross-functional teams,³⁵ could be a powerful counter to unhealthy leadership styles. An alternative model, perhaps for those operating in small, formed units or ad hoc teams would be to include an element of team-based appraisal alongside individual reporting as a better way of capturing the collective nature of military service. Instead of focussing solely on an individual's output, a team-based approach combines individual and collective outcomes in which the individual's contribution to team success is also reflected. This approach has been adopted in some organisations and is recognised as having a positive impact on

team dynamics and performance, but it needs to be applied to teams with a common output and where individuals recognise their collective dependence.³⁶

Reporting Frequency. The annual nature of the reporting cycle can force those being reported on into behaviours based on the reporting interval rather than the responsibilities of their rank.³⁷ A solution could be to conduct formal assessments less frequently, with informal appraisals between time that would enable feedback on performance and coaching to develop the job-holder. Such an approach becomes more viable where individuals serve longer in posts, and would enable them to tackle problems that are not amenable to rapid resolution without fear that their careers would be adversely affected by not delivering change within a single year.

Recognition. The German Army had a strong tradition of awarding medals to those who demonstrated independent action and initiative, which it used to reinforce behaviour it wanted from its people.³⁸ Commercial organisations do the same with Employee of the Month/Year Schemes. Crucial to the success of both of these systems, however, is the fact that the rest of the organisation knows the reason for the award so that they can emulate the behaviours. Often, recognition is afforded to those who have been successful in combat, and sometimes not even then,³⁹ even though they may have displayed behaviours contrary to the organisation's espoused beliefs and values. To change the culture, the recognition system needs to create heroes of the new behaviours, and make it clear to others why the award was made so that they can emulate the 'hero'. This approach worked effectively in the recent US change to COIN with Gen Petraeus and his fellow COINdinistars.⁴⁰ One area that deserves greater attention is how to recognise those who will not reach the highest ranks so that they feel valued and thus contribute, otherwise there is a danger that they end up regarding themselves (or even worse those in the Executive Stream regard them) as less worthy than those for whom rank and thus pay is more accessible. Qualification based remuneration, insignia or other differentiators accessible only through the specialist route could all play a part in recognising the worth of this group.

Intrinsic Rewards

Typically those joining the Forces do so for reasons other than material benefit: challenge, excitement, early responsibility and opportunity all surface regularly as factors influencing the decision to enlist.⁴¹ Meaningful work and careers should, therefore, form part of the reward strategy, which is complex because meaning is judged by the individual, based on whether the work is regarded as worthwhile by others (including their employer) and subjectively attractive.

Meaning can be a powerful factor in an employment model, but is only likely to be harnessed effectively if the work's worth is accepted by the individual. Internal communication is crucial to this approach, not just in conveying how the employer and others values the contribution, but by providing the employee(s) with a voice so that they can engage fully

with their work. Evidence from commercial organisations indicates that effective employee engagement enhances the value of the intrinsic reward system and improves organisational performance.⁴² A strategy of flexibility in which prudent risk-taking forms a part, requires an engaged workforce that will take the initiative and seize opportunities as they arise. Internal communication is an important element in employee engagement, not just for improving the means of disseminating information, but in affording staff a genuine voice through which changes can be initiated. Providing a genuine voice on an Adult-to-Adult basis would represent a shift from the traditional Parent-Child model that has evolved in the Services,⁴³ hence further research into how employee engagement should be delivered within a military context could usefully form part of a genuinely new employment model.

Communication needs a message as well as a medium. Greater empowerment, rather than a euphemism for more work or responsibility without authority, could raise the reward an individual obtains through their work, especially where it contributes to enhancing an individual's self-esteem, or achieving their full potential (Maslow termed this state 'self-actualisation'). Mission command is one form of empowerment, in which decision-making is passed down the hierarchy, is espoused by the Services, with greater or lesser conviction depending on the circumstances. However, mission command is always under threat from a countervailing pressure in which a fear of mistakes acts to curb subordinate freedom. This problem is exacerbated by improvements in communication that extend the distance over which it is perceived that centralised control can be exerted. In this way, as well as others, industrial structures such as machine bureaucracies tend to frustrate the higher yearnings of their workforce and can lead to alienation against four factors: powerlessness, meaninglessness, social isolation and self-estrangement.⁴⁴ Powerlessness refers to the inability to control one's working practices or activities, often as a result of rigid job definition; meaninglessness arises where people do not see value in what they are doing; social isolation occurs when people feel removed from their colleagues and; self-estrangement concerns an inability to express oneself through work or make a difference. Adhocracies and small teams tend to provide more scope for mitigating all four causes of alienation, whilst education is itself a powerful vehicle for addressing self-estrangement.

Where individuals do not find intrinsic rewards, they tend then to look for reward through extrinsic factors, which creates pressure for wage inflation. There is danger, therefore, that too long an extension of tour lengths might re-focus the individual on the extrinsic reward system, but as Katz observes, it is not inevitable that job satisfaction will decline with longevity because the opportunity to work in a known environment can bring its own rewards.⁴⁵ Perhaps the crucial element is to afford people with the opportunity to make a difference, which suggests that job design needs to form part of the intrinsic reward process alongside empowerment. In a financially constrained environment, improving the intrinsic reward component of the 'offer' may be the only way to improve retention of the high calibre personnel who comprise the Services, but it cannot provide a permanent solution and so at some point will need reinforcing with appropriate extrinsic rewards.

Culture

Whilst not explicitly identified as a domain, the components of Galbraith's Star Model (strategy, structures, processes, people and rewards) are shaped and inhabited by the organisation's culture; any change in strategy that threatens the organisation's self-identity is likely to be more difficult to implement than one that is congruent with its goals, culture and ethos.⁴⁶ Schein defines organisational culture as '*a pattern of shared basic assumptions learned by group as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems*'.⁴⁷ It has coercive power because people want to fit in with an organisation, but it is also dynamic and, as such, is more suited to promoting flexibility than formal control systems that are more rigid and can struggle to keep pace with changes in how an organisation wants people to behave.⁴⁸ Organisations rarely have a single culture; the RAF has an aircrew culture, with sub-divisions within that, an RAF Regiment culture, station and squadron cultures etc, however, all military cultures tend to be consistently strong and traditional/conservative.

Culture operates at three levels: 1) artefacts; 2) espoused beliefs and values; 3) basic assumptions. The military is awash with artefacts, including a language (too often impenetrable to outsiders), uniform, traditions and heroes whose lives tell us something about what the organisation values. Espoused beliefs and values are those that are professed by the organisation and the Services each have formal statements of these, although interestingly, none of the core values includes innovation or adaptability. Underlying assumptions are the result of past successes, where the same approaches have consistently produced successful outcomes. Current behaviours and decisions (how things are done) are conditioned by these assumptions as they provide a shared lens through which the organisation views its environment. The assumptions may be the same as the espoused values, but they need not be; for example an organisation whose professed values include teamwork may actually reward individual competitiveness and political acumen, in which case the values and behaviours are not compatible and teamwork is unlikely to be a core part of the organisation's assumptions.⁴⁹

Culture at the deepest level is essentially pragmatic; hence cultural change requires the recognition that the existing assumptions are ill-suited to the organisation's current needs. Looking at 'why' the organisation does things rather than just what it does requires a different type of learning called 'double loop' learning.⁵⁰ It is costly in human terms because it goes beyond reviewing innocuous surface elements such as structures and processes, and has to question the organisation's underlying assumptions. In doing so, it temporarily destabilises the organisation and people's sense of identity and certainty. Changes in the external environment alone, therefore, are often insufficient to drive organisational cultural change because people make decisions not just on hard evidence but also instinctively based on subjective factors, which may explain why it is easier to change culture after very obvious organisational failure. It also helps reinforce the change where the new behaviours can

demonstrate success quickly e.g. the Surge by the US Armed Forces in Iraq in 2008. Cultural change is fundamentally a human activity, which places the People and Rewards domains at the heart of any strategy requiring such a shift. Often, however, people prove to be the resistors in the organisation's circuitry, as well as its capacitors.

The grounds on which people resist change are numerous, comprising individual and collective or organisational factors. At the individual level, Mullins includes: perceptions/biases; habits; inconvenience, fears over a loss of job security and the unknown as grounds on which people resist change. Collectively, organisational resistance includes: the preservation of stability/predictability and fear that change will threaten the power or influence of one part of the organisation in relation to others (what in the military context can be seen as inter-Service rivalry).⁵¹

Culture is slow to change, especially at the level of Assumptions. The German Army took decades to embed the concept of *'aufstragtaktik'* and the US Marines took almost forty years to adapt to a culture that emphasised amphibious warfare.⁵² Systematically embedding a culture of flexibility in the RAF, therefore, will be a slow process and it is not clear whether the case for change is accepted widely enough to give it the impetus it would need. The tendency to talk up the tactical positives in recent military campaigns provides a psychological comfort blanket that undermines the argument for change and a more critical debate is needed within the Services, such as that which happened in the United States during their move towards a COIN Model. Moreover, because the new culture will require different behaviours, people will inevitably make mistakes in the transition. The culture needs to embrace mistakes that are honestly made as opportunities for personal and organisational growth rather than seeking to punish the perpetrator.

To help the process of cultural change take root, the RAF should include flexibility in its core values and standards as a very obvious part of its espoused beliefs. This would need to be reinforced by identifying 'flexibility heroes' whom others can emulate and move the concept from mere espousal to part of the core assumptions underpinning the way the RAF works. The process of initiating and sustaining cultural change could be further catalysed by expanding the range of actors to include greater diversity in the organisation's intellectual capital; in delivering this, the Reserves and civilian partners represent a valuable resource.

Conclusion

To deliver a truly integrated workforce model, the RAF needs to become more sophisticated at capturing, understanding and using the skills of its more diverse workforce. This requires more than merely improvements to the current e-HR package, although this is essential, but the future system needs to be able to capture and describe skills that exist outside the core workforce. This has to start with a common lexicon for capturing the contacts, knowledge, skills, experience, competences, and then link it to an information system that can hold and manipulate the records.

Placing flexibility at the heart of RAF strategy requires balanced change across a range of domains, all of which have to be aligned towards the same strategic goal. A more integrated approach is needed that provides for greater diversity and differentiation in structures and personnel. The Prussian Army's/Reichwehr's approach shows clear evidence of the holistic approach in practice, including a radical structural overhaul that introduced the Great General Staff, emphasised smaller operational groupings, implemented new tactics and training and encouraged innovative solutions to problems through field exercises.⁵³ As for its people, the German Army became more socially heterogeneous, which brought in new ideas and ways of thinking, and moved towards a merit-based system of rewards, including commissioning, that recognised and valued education, character and initiative.⁵⁴ Central to this new approach was the concept of *Aufttragstaktik* (mission command) that sought to empower junior personnel by pushing authority down the hierarchy and encourage innovation and adaptability, which was seen clearly in the development of the *Strosstrupp* in 1918 and the concept of *Blitzkrieg* by 1939. It would be wrong, however, to attribute the German Army's adaptability solely to the concept of *auftragstaktik*; it was but one element of a long term and systematic approach to strategic alignment that matched Galbraith's Star Model closely. At the moment, the changes in UK Defence are too fragmented and there is a danger that without a systematic approach to developing flexibility the strategy will fail.

As we have seen, a flexible organisation looks like its surroundings, which means that its structure and processes must be contingent. Preserving the potential to change quickly, therefore, resides in the people component; the organisation's capacitors. This requires an investment in human capability to ensure that the people are willing and able to adapt quickly to meet the organisation's challenges. The starting point is a better understanding of what is wanted from the people in different parts of the organisation, not just by Service but also by the elements within each (the Strategic Apex, Middle Line, Operating Core, Techno-structure and Support Staffs) and tailoring the HR and reward processes to allow for differentiation. Selecting adaptable people with the right attitude is essential, but so too is the process by which they are socialised and developed, both through formal training and education interventions, and by how they are employed. A one size fits all model is likely to exert a homogenising force, whereas diversity needs to become the organisation's strategic strength. The diversity can be engendered through a wider mix of talents and employment types, exposure to internal and external partners, an investment in education, and a reward system that accommodates the different kinds of value people bring, especially where promotion may be limited by organisational size. To be sustainable, the changes have to permeate to the heart of the organisation's culture. Creating a new breed of 'heroes' who demonstrate the agile behaviours this paper advocates, and incorporating agility or innovation as a core value will help, but ultimately it has to seep into the RAF's DNA at the level of basic assumptions, which will take time.

People undoubtedly are part of the solution, but as part of a wider strategy for building organisational flexibility; they are not the 'silver bullet' and delivering the strategic edge

through people will be difficult. Defence is not an organisation, the Services are, but the RAF does not have the authority to deliver what is proposed here without support. The Chief of Defence Personnel owns the high level personnel and training policies that underpin the conclusions in this paper and, by definition, the more dynamic use of cross-functional teams advocated here cannot be applied by one Service alone.

People are at the heart of successful organisational change, and are equally often the cause of its failure. The Future Character of Conflict recognised this by claiming that people would provide the strategic edge in future conflicts: this has since been defined as 'human capability'. Focusing on human capability is a logical response to UK Defence's difficulties, but the term is currently too ill-defined⁵⁵ to direct action and lacks a clear statement of what the human domain brings to organisational success. In the absence of clear strategic direction to HR, there is also a danger that in the absence of other affordable choices, the New Employment Model's changes to the personnel environment are seen as a panacea and elevated into ends rather than means for delivering new strategic outcomes.

The UK focus on human capability must be complementary to, and not an alternative to appropriate investment in the physical and conceptual components of fighting power. Whilst flexibility can lessen the risks facing the UK in the medium term and makes the concept of human capability a valuable contribution to UK Defence doctrine, the German experience of two World Wars shows that flexibility cannot substitute for mass indefinitely. Flexibility in the people domain needs to be placed within a broader framework of changes to culture, structure, processes, rewards and volume if it is to become something other than the UK's *Furia Francese*.⁵⁶

Notes

¹ P. O'Neill (2015). Developing a Flexible Royal Air Force for an Era of Uncertainty, *Air Power Review* Vol.18(1) at pp.46-59.

² P. Wright & S. Snell (1998). 'Toward a Unifying Framework for Exploring Fit and Flexibility in Strategic Human Resource Management'. *Academy of Management Review*, Vol.23(4) at p.761.

³ M. Colarusso & D. Lyle. (2014) 'Senior Officer Talent Management', *Strategic Studies Institute* at p.11.

⁴ In this regard it is noted that between 1919 – 1941 officers in the US Army typically spent half to two-thirds of their careers in training or training establishments as it was recognized that they would form the nucleus around which a mobilized army would form: Colarusso & Lyle, *ibid.*, at p.3. In the Inter-war German Army, candidates for the General Staff undertook a four to five month preparatory course before being set for selection and, if successful, would then spend three years training to become General Staff Officers: D. Spires. (1984) 'Image and Reality' at p.43. The costs associated with extensive training could be reduced through an investment in distributed learning, which would shorten the time individuals spend away from their units and being productive.

⁵ There are some exceptions in the RAF, such as direct entry SNCOs or for medical personnel,

but the system is largely one of growth from within.

⁶ The Report of the Officer Development Board: Major-General Roger Rowley and the Education of the Canadian Forces. R. Wakelam & H Coombs eds. Waterloo ON: Wilfrid Laurier Press 2010.

⁷ There are at least four types of talent: Officers with the potential to reach senior leadership roles; officers and other ranks who have the potential to lead in functional or professional areas, but not senior leadership potential; officers and other ranks in critical technical roles requiring highly specialized and scarce skills; others not described above but who have talents that may be of value to the Services: Generating and Retaining Talent. Defence Human Capability Science and Technology Centre. UC-DHCSTC_12-P_T2_013/007 dated 28 March 2014.

⁸ Defence Science Board (2011) 'Enhancing Adaptability of US Military Forces' at p.135.

⁹ H. Mintzberg, (1983) 'Structure in Fives'.

¹⁰ C. Fernández-Aráoz. (2014) '21st Century Talent Spotting', *Harvard Business Review*, Vol.92(6) at p.52.

¹¹ Colarusso & Lyle, *ibid.*, at p.164.

¹² Fernández-Aráoz, *ibid.*, at p.56.

¹³ M. Sharp & P. O'Neill. (2009) RAF Officer Career Management Strategy.

¹⁴ R. Katz. 'Managing Professional Careers: The Influence of Job Longevity and Group Age' in Tushman & Anderson, *ibid.*, at pp.184-188.

¹⁵ Wicked Problems originate in work by Rittel and Weber (see H Rittel & M Webber. (1973) 'Dilemmas in a General Theory of Planning' *4 Policy Sciences* at pp.155-169). They are complex (rather than complicated) problems for which there is no uni-linear solution, are often intractable, and where the response changes the nature of the problem. The problems can only be managed (rather than solved) by a process of continuous engagement with the symptoms as they appear. For more information on Wicked Problems in a military context see also K, Grint, (2008) 'Leadership, Management and Command: Rethinking D-Day'.

¹⁶ Colarusso & Lyle, *ibid.*, at p.95.

¹⁷ Colarusso & Lyle, *ibid.*, at p.146.

¹⁸ Katz, in Tushman & Anderson, *ibid.*, at p.194.

¹⁹ L. Sorely, 'The Will o' the Wisp General' Paper presented on 25 October 1980. Quoted in Colarusso & Lyle, *ibid.*, at p.150.

²⁰ J. Grygiel. (2013) 'Educating for National Security'. *Orbis* Vol.57(2) at p.202.

²¹ See for example Kiszely 'Post-modern Challenges for Modern Warriors', *ibid.*, at p.12.

²² Air Chief Marshal Sir Stuart Peach in Speech to RUSI Air Power Conference 2013.

²³ Reported in K. Kelley and J. Johnson-Freese. (2014) 'Getting to the Goal in Professional Military Education', *Orbis* Vol.58(1) at p.120.

²⁴ Galbraith, *ibid.*, at p.145.

²⁵ See amongst others, J. Johnson-Freese. (2012) 'The Reform of Military Education'. *Orbis*, Vol.56(1) for criticism of the US model which, although different in many respects, includes elements that have common cause with the UK approach.

²⁶ C. Krulak (1999). 'The Strategic Corporal: Leadership in the Three-block War' in *Marines Magazine* at

http://www.au.af.mil/au/awc/awcgate/usmc/strategic_corporal.htm (accessed 6 April 2015).

²⁷ Colarusso & Lyle, *ibid.*, at p.4.

²⁸ A. Maslow. (1954) 'Motivation and Personality'.

²⁹ Allowances are cost-effective components of a pay model as they are non-pensionable and thus cheaper over the long-term than using basic pay. The French example is instructive in this regard where up to 50% of the income is from non-pensionable allowances.

³⁰ S. Rosen. (1998) 'New Ways of War'. *International Security*, Vol.13(1) at p.167.

³¹ 'Effective Intelligence' and 'Initiative' are formally assessed in the Officers' Joint Appraisal Report (for officers up to 1*), a component of both is flexibility, but this need not imply innovation or intellectual agility. Joint Service Publication 757, Part 2 Vol.1.

³² Maj Gen Baron von Freytag-Loringhoven. (1991) 'The Power of Personality in War' at p.328.

³³ Colarusso & Lyle, *ibid.*, at p.3.

³⁴ The RAF Officer and Servicemans' Joint Appraisal Reports showed (with rounding error): 2% received the highest (A) Grade; 30% = A-; 43% = B+; 21% = B; 3% = B-; C = 0.4% and D = 0.02%. Source, RAF Manning, 20 January 2015.

³⁵ Sharp & O'Neill, *ibid.*

³⁶ See for example: S. Scott & W. Einstein (2001). Strategic Performance Appraisal in Team Based Organizations in *Academy of Management Executive*, Vol.15(2) , pp.107-116. Also, United States Office of Personnel Management (1998). Performance Appraisal for Teams: An Overview. PMD-14 at <https://www.opm.gov/policy-data-oversight/performance-management/reference-materials/historical/teams.pdf> (accessed 6 April 2015).

³⁷ Elliott Jacques' 'Timespan of Discretion' Theory argues that the higher up an organisation an individual works, the greater the lag between making a decision and seeing its outcome. An annual appraisal, therefore, runs the risk amongst senior personnel of: falsely assessing them against their predecessor's initiatives; failing to capture what the subject has done; captures the inputs rather than the outcomes, or; drives a short-term focus for objectives that can be delivered in year, which are not the best return on the salary being offered and are unlikely to address the complex challenges the organisation needs to tackle. E Jacques. (1971) 'Time-span Handbook'.

³⁸ J. Wilson. (1989) 'Bureaucracy', at p.17.

³⁹ F. Ledwidge 'Losing Small Wars' at p.117.

⁴⁰ Ucko, *ibid.*, at p.131.

⁴¹ The RAF Entrants' Survey that asks new joiners what attracted them to the Service, identifies these factors; the RAF Survey's findings are consistent with the findings of similar surveys in the Royal Navy and British Army.

⁴² C. Truss et al (2013). 'Employee Engagement, Organisational Performance and Individual Well-being: Exploring the Evidence, Developing the Theory', *The International Journal of Human Resource Management*. Vol.24(14) at 2658.

⁴³ The terms are taken from Transactional Analysis. See for example A. Wagner (1996). *The Transactional Manager*.

⁴⁴ R Blauner.(1964) 'Alienation and Freedom'.

⁴⁵ Katz in Tushman & Anderson, *ibid.*, at p.188.

⁴⁶ T. Farrell. (2008) Dynamics of British Transformation. *International Affairs* at p.783

⁴⁷ E. Schein. (2010) 'Organizational Culture and Leadership' at p.18.

⁴⁸ C. O'Reilly & M. Tushman, 'Using Culture for Strategic Advantage: Promoting Innovation Through Social Control' in Tushman & Anderson, *ibid.*, p.212.

⁴⁹ Schein, *ibid.*, at p.27.

⁵⁰ C. Argyris, 'On Organizational Learning' at p.30.

⁵¹ L Mullins. (2010) 'Management and Organisational Behaviour' at pp.756-7.

⁵² Rosen, *ibid.*, at p.159.

⁵³ Shamir, *ibid.*, at pp.34-35.

⁵⁴ Spires, *ibid.*

⁵⁵ The Defence People and Training Strategy 2014 defines Human Capability as 'the collective impact the people have on the capability of an enterprise... It is the product of all the influences on people at any one time, and therefore it varies as influences vary over time.'

⁵⁶ In the face of defeats in the mid-19th Century the French created a myth about the overwhelming value of the moral component based around inevitable irresistibility of massed Frenchmen dashing forward on the attack - the *Furia Francese*. This placed people at the heart of doctrinal thinking but, undervalued investment in the physical component such as mass and new technology. In the early battles of World War One, the machine gun brought reality to bear against French wishful thinking driven by the lack of alternatives to the *Furia* when, by the end of the First Battle of Marne, the French had suffered 250,000 casualties. C Barnett, (1986) 'The Swordbearers' at p.39.

The Battle of France, Bartholomew and Barratt: The Creation of Army Co-operation Command

By Matthew Powell

This article investigates the impact of the Battle of France, 1940 and the British Army's subsequent investigations into the fighting impacted on the Royal Air Force (RAF) and the development of tactical air power in Britain. The investigations by the British Army placed the RAF in a difficult position with regards the provision of air support in Britain. This investigation was severely flawed from the outset with its being chaired by a senior officer who was well known to have a hatred of the RAF and joint-service solutions and blamed the failure of the British Expeditionary Force on a lack of air support from the RAF. It fundamentally misread German tactical and operational doctrine, particularly the application of air power. It will highlight the position of the RAF after the Battle of France and the discussions between the Air Ministry and War Office over the creation of an Army Co-operation Command. Through analysing how Army Co-operation Command was created by the RAF, the RAF's attitude towards tactical air support will be made clear. Army Co-operation Command was created to appear to be a solution to the problem of RAF-Army relations on the surface but as the Army began to work with Army Co-operation Command they realised it had been created to achieve very little in practice.

Introduction

War Office investigations into the British Expeditionary Force's (BEF) catastrophic defeat in France began almost as soon as the last troops had been rescued from the beaches of Dunkirk in June 1940. Working forward from the assumption that the Army's doctrine, strategic planning, and execution of the battle were sound, many flawed conclusions were drawn, especially with regard to how aircraft were best be used to support troops in the field.¹ The Air Ministry also examined the recent campaign and concluded that their concepts regarding the employment of aircraft to support land forces were sound. Airmen, however, had not suffered either the ignominy of *Operation Dynamo* or the shock associated with the completeness of the defeat suffered at the hands of the *Wehrmacht*. The fundamental question that had to be answered in the light of the Battle of France was 'Who should control aircraft on the battlefield?'² Negative fallout from the Battle of France pushed the Air Ministry into a corner. The War Office blamed a lack of adequate air support, as viewed through War Office eyes, for the crushing defeat.

This article argues that the Air Ministry did not see Army co-operation as a priority after the Battle of France but had to placate the War Office's demands in order to continue its prosecution of the strategic air campaign against the German homeland. On 1 December 1940 the Air Ministry in co-operation with the War Office, established Army Co-operation Command. The new command, however, was organised to be as weak as the Air Ministry could get away with and, although the evidence does not allow the argument to be made that the Command was set up to fail, it would find any success difficult to achieve.³ This critical interpretation is supported by an analysis of the investigations conducted by the War Office and the Air Ministry after The Battle of France, the process by which Army Co-operation Command was formed, and the Air Ministry's motivations in creating the Command. In order to appease the War Office, the Air Ministry had to appear to be at least doing something to improve the development of Army co-operation and repair the fraught relations that existed between the two services in the summer of 1940. Army co-operation was still not regarded as a proper method of employment of aircraft by the Royal Air Force (RAF). The RAF's focus on the strategic rather than tactical application of air power was partly for geo-political reasons and also for self-preservation purposes. Williamson Murray has argued that Britain's geographic position meant that it was able to sit on the strategic defensive whilst its economic power was fully harnessed and the effects of strategic bombing made themselves felt.⁴ In terms of self-preservation, the RAF came under attack from the Army and Royal Navy almost as soon as the First World War had ended. The senior Services were profoundly unhappy that the defence budget was now being split three ways instead of the two that had been the case in 1914. The RAF emphasised the potential an independent air force had to fulfil a strategic role. This was essential to British security policy as, in the event of a major European conflict, an independent air force could conduct a far-reaching strategic role.⁵

The major reason for disagreement between the RAF and Army with regards tactical air power, was over the idea of aircraft being used as a protective umbrella in penny packets for land forces.

This contradicted the fundamental principles of air power garnered from experience in the First World War.⁶ This was how 'air support' was seen by the Army, and also continues to be seen. As Sebastian Cox has noted '... the soldier's philosophical outlook is predicated on the need or desire to have organic air on call when and where he thinks he needs it.'⁷ This view was reinforced through the Army's experiences in France in 1940, particularly in the aftermath of the operation on the beaches of Dunkirk. The forces on the ground in France did not see RAF aircraft patrolling the skies above them due to their conducting interdiction missions away from the front lines. This left the ground forces feeling extremely vulnerable to ground attack, a feeling that, the Army felt, could be dissipated through standing patrols above the troops. It was also, however, partly due to the strategic situation now facing Britain and the need to keep prosecuting the war against the Germans in order to continue to receive support from friendly nations such as the United States. The only way that this was possible was through a strategic air offensive against the German homeland. The RAF were also involved in the defence of the British Isles against the *Luftwaffe* in the summer of 1940. With these wider strategic concerns and the possibility of a return to the European continent looking increasingly unlikely, the RAF must be given credit for giving Army co-operation as much attention as they did at this time.⁸

Reports received from the commander of British Air Forces in France (BAFF), Air Marshal Sir Arthur 'Ugly' Barratt, indicated that whilst the air support system had not functioned perfectly, the ideas on which it was based were sound and should be used as the basis for further development. The main problem was the Army, which in 1940 was neither configured nor trained to fight a modern war.⁹ The most recent historiography that looks to explain the comprehensive and swift defeat of the Allied forces in France, makes it clear that the Air Ministry put forth a strong case.¹⁰ Within the context of the summer of 1940, however, the Army looked to blame its defeat on the failures of others, particularly the RAF, and found the perfect scapegoat in Army co-operation. This was an area of joint service co-operation that had been relatively neglected by both the Army and the RAF during the inter-war period. The debates about the correct use of aircraft in support of land forces had begun almost as soon as the First World War had ended and continued throughout the inter-war period. In order to prevent the possibility of the formation of an Army air arm, which was a solution proposed several times by the Army, the Air Staff were willing to compromise with the General Staff provided their requirements in air support could still be met. The Army felt that an Army air arm, similar to the Royal Flying Corps, was their best option to gain the correct form of air support in the field. The RAF felt that a separate Army air arm would lead to a reduction in the resources that would be available to prosecute a strategic air offensive and to the fundamental principles of air power that were codified at the end of the First World War not being applied correctly. These principles formed the fundamental basis of RAF doctrinal thinking throughout the inter-war period.¹¹

Some good work, however, was done by the RAF during the inter-war period. Annual Army co-operation exercises were held between 1927 and 1934. During these exercises ideas such as the co-location of Army and RAF headquarters and the use of fighter aircraft in a

close support role were trialled. It would take the experiences of the Second World War for ideas such as the co-location of headquarters to become fully implemented and calls into question the extent to which the work done through inter-war exercises was transferred into learned and applied doctrine. There was also much co-operation between land and air forces in different parts of the Empire.¹² There is little evidence that the experience gained across the Empire was assimilated into the development of tactical air power thinking in Britain. This was due to how the experience across the Empire was interpreted. These experiences were seen as not being applicable to first-class modern warfare as ground attacks had been conducted against 'uncivilised peoples'. To stand up to the barrage that the Air Ministry took in the summer of 1940 would take an organisation with extreme self-confidence in its ideas and the ability to carry its argument forward in the face of prevailing opinion (such as the British Army's exaggerated praise of the *Stuka* dive-bomber).¹³ During the difficult summer and autumn of 1940 the RAF had no confidence in its ability to achieve either. The Air Ministry, therefore was willing to concede a great deal of ground in order to appease the War Office. They agreed to the War Office's proposal to set up a new RAF command that would be responsible for the development of all Army co-operation ideas within Britain. W.A. Jacobs has argued that 'in truth the defeat of 1940 had contradictory effects. It greatly strengthened the Army's moral case; after all, they had fought and lost without adequate air support even if that difficulty did not explain the whole of their failure'.¹⁴ The pressure faced by the Air Ministry forced them to at least be seen placing the development of Army co-operation as more of a priority and it was in this atmosphere that Army Co-operation Command was created. The fall of France radically altered the strategic situation faced by Britain.

With the British armed forces no longer having bases on continental Europe from which to launch operations and a hostile enemy in control of the Channel ports and French Channel and Atlantic coasts, Britain faced a strategic dilemma. The political focus was now on continuing the fighting against Germany from bases in Britain and ensuring the whole nation was determined to withstand the onslaught that was coming. The only way in which this could be achieved was through the strategic use of air power against targets in the German homeland. There was very little, if any, thought given to [preparing for, or] conducting operations on the continent as the possibility of a return... in the short term seemed remote... There was also a belief that the economic warfare policies embarked upon by Britain at the start of the war would start to impact on... Germany.¹⁵

The Bartholomew Committee Report

The investigation into the debacle that the BEF had been involved in France began very shortly after the final troops had returned home from the continent.¹⁶ The Army's major investigation was, however, preceded by the War Cabinet's decision to conduct an interview with the Commander-in-Chief (C-in-C) of the BEF, Lord Gort. In the words of David Ian Hall, Gort

delivered a detailed narrative of events, one that emphasised the many military shortcomings of Britain's allies, namely the Belgians and the French, and the devastating

effect of German dive-bombers and tanks had had on the course of the campaign as well as on the morale and fighting ability of all allied soldiers.¹⁷

At no point did Gort discuss the failures of the BEF, and it is from this that the Bartholomew Committee took its first major assumption. It is further interesting to note that the effects of close air support were really confined to one sector around Sedan but the fear of attack by this method spread very quickly.¹⁸ Further to Gort's appearance in front of the War Cabinet, the question must be asked why Barratt, as commander of BAFF, was also not interviewed. There are two potential explanations for this omission: first, the War Cabinet took Gort's opinion of the air war to be the definitive account and there was no requirement to seek a potentially contradictory opinion on the matter. Second, as this was primarily a land battle with the BEF and their allies in the field bearing the brunt of the fighting, the role played by allied aircraft in the battle was deemed to be of secondary significance. The Army was willing to put forward a version of events that deflected as much of the blame for their defeat as possible from themselves.¹⁹

The officer chosen to head up the investigation was to assist them in furthering this aim. General William Bartholomew was an officer whose distaste for joint operations was widely known. This opinion of joint operations was, unsurprisingly, combined with a hatred of the RAF. He made no attempt to disguise this hatred and it had an impact upon Bartholomew's career within the Army.²⁰ Inter-service relations reached such a low ebb whilst he was Commandant of the Imperial Defence College between 1929 and 1931 that he was posted to India. Hall has further argued that his attitude towards the RAF was the major reason he did not become the Chief of the Imperial General Staff in the mid-1930s.²¹ With these attitudes to the RAF, it is unsurprising that Bartholomew was chosen to head up the War Office's investigation and continue to put out the Army's version of events to as wide an audience as possible.

The Bartholomew Committee only saw one air officer. This officer was the Air Officer Commanding-in-Chief (AOC-in-C) of the RAF Component, Air Vice-Marshal C.H.R. Blount.²² The report's conclusions were based on several false ideas. The first being in the first part of the report that looked at the differences between the *Wehrmacht* and British ideas of warfare including tactical methods, organisation and material.²³ Hall has described the first part of the Bartholomew report as 'particularly instructive for...the historian because of its failure to distinguish the seminal features of the Wehrmacht's new Blitzkrieg tactics.'²⁴ The report stated that 'In spite of the enemy's superiority in materials, on no occasion were we forced to relinquish the main position by a frontal attack against the BEF.'²⁵ The report failed to show an understanding of the German tactics of bypassing enemy points of resistance to find gaps in the defensive system in order to attack the enemy's lines of communication and command and control system. Although this is discussed when the report considers the BEF's defensive tactics and highlights further how little was understood about the German methods. The report stated that

The German method of preparation for attack consists of rapid reconnaissance, which taps along the front line until a weak spot or gap is found. As soon as such a spot is located, the crossing of the obstacle is effected and a small bridgehead made... Once such a crossing is made the bridgehead is widened to allow the passage of more troops.²⁶

This analysis allowed the committee to reach the conclusion that British tactical ideas on land were sound.²⁷ This false conclusion enabled the committee to put forward further conclusions based upon British tactics. A false analysis of German methods is a constant theme throughout the period of the creation Army Co-operation Command as the Army continued to push for its own air arm. Further in the report, the committee claimed that if the British were to fight the Germans on their own terms they would be victorious.²⁸ That such an obvious statement could pass without any questioning calls into question many of the conclusions reached in the report. Any armed force fighting an enemy on its own terms should claim victory in the field.

Despite its many failings, which are noted above, the report did put forward certain ideas that reflected the experience of the soldiers on the ground. The report argued that the *Luftwaffe* had focused on the morale of troops rather than their destruction when conducting close air support missions. The extent to which close air support affected the battle as a whole, however, must be questioned, especially when the analysis by other commentators is considered. The report argues, based upon the reports received from the formations involved, that close support was more important than any other factor in a successful break-through against the French Army. This conclusion, however, uses the one example of this at Sedan and attempts to use this as a general lesson to be applied to the campaign as a whole. Whilst close support was a factor in the break-through at Sedan, the use of this isolated example as a general lesson ignores the other successes achieved by the *Wehrmacht* in France without close support from aircraft. The impact of aircraft on morale is further investigated, but from the BEF point of view and presents the RAF with a very difficult concept to defend. The report stated that

The magnificent work done by the RAF in the face of German numerical superiority is appreciated by all. The committee would, however, like to point out that by the nature of things, *neither the actual bombing carried out by the RAF in support of the BEF nor its effect was seen by the man in the field*. All day he saw swarms of enemy bombers escorted by fighters and suffered from their attack. *Unlike the German soldier, he had never seen aircraft closely co-operating with him to defeat his own particularly enemy opposite to him. All this had a very definite effect on morale and gave the impression that the enemy superiority was complete and that our own air force hardly existed.* [Author's emphasis].²⁹

Despite conducting interdiction missions with what few aircraft were available during the campaign in France, the soldier on the ground felt that they were being neglected and facing the full brunt of the German onslaught alone.³⁰ In a report on the air operations in support of the BEF it is noted that

Most of the bomber attacks both by day and by night, were direct against German formations which were passing through the areas originally defended by the French 9th Army. In consequence, their action would be completely unknown to the troops of the BEF who would see nothing of them.³¹

Unable to see the effects of the RAF's interdiction missions, this feeling, whilst maybe not accurate, is understandable from the point of view of the soldier on the ground. In order to resolve this particular issue, the report recommends that in future operations, 'the RAF must "show the flag" to the troops in the forward areas – even at the expense of other tasks – by carrying out some bombing with existing machines in sight of our lines.'³² As Alistair Byford has noted

What delivered success for the Germans was primarily indirect air support – isolating the battlefield and cutting communications – following the achievement of air superiority, but both of these effects were invisible to the soldier on the battlefield and consequently, not well understood.³³

The improvements to the Army recommended by the committee focused on areas such as mobility, the use of motorised transport and wireless communications. In its recommendations for air support, the committee showed a remarkable lack of understanding of basic terminology.³⁴ The need to gain air superiority over the battlefield was understood and that the *Luftwaffe* had been able to gain this was seen to be a factor in the German victory in France. The understanding of what air superiority entailed demonstrated the lack of understanding within the whole of the Army, as well as those responsible for compiling the Bartholomew report. For the Army, air superiority consisted of aircraft over the battlefield able to act in protective umbrellas for ground forces. When the German use of air support came under consideration, the committee again misread German actions.

There is little doubt that the policy of equipment, organization [sic] and training of the enemy has been directed to this end [close support]. Even in the case of "impromptu" attack it was seldom more than 25 [sic] minutes before the call was answered. This indicated not only good organization [sic] and communications for the purpose, but the siting of many of their landing grounds close up behind their own troops. Efforts should be made to simplify and improve our own intercommunications between ground and air for similar purposes... It is imperative to ensure forthwith that a system comparable to that of the Germans should be introduced into our Army and Air Force.³⁵

The committee, and indeed the Army as a whole believed that the *Luftwaffe* was simply a close support force to be employed with the *Wehrmacht* in land operations. There was little discussion of the interdiction operations conducted by the *Luftwaffe* prior to the support given in the crossing of the Meuse. The *Luftwaffe's* main operations concerned conducting attacks against airfields and isolating the battlefield.³⁶ The focus of the evidence

given and as a result the conclusions reached by the committee were only on the supposed impact of close support on the Allies. The status of the *Luftwaffe* in respect to the *Wehrmacht* was also subject to poor analysis.³⁷ It was believed that the *Luftwaffe* was subordinate to the *Wehrmacht* and this gave further impetus to the Army's demands for an air arm under their control.³⁸ With regards to the impact of air support, the report's conclusion that support that was given 'as supporting fire to cover the assault of armoured and, at times, infantry formations.'³⁹

The Creation of Army Co-operation Command

With the findings of the Bartholomew committee, the Army went on to the offensive in attempting to gain their own Army air arm. The conclusions presented in the report forced to RAF to face a *fait accompli* concerning air support. The RAF was no longer in a position where it could ignore the requests for more development in close support, including aircraft, from the Army.⁴⁰ This was due to a combination of the work done by Group Captain A Wann and Lieutenant Colonel J D Woodall developing a basic communications system for forward formations to request ad hoc support and the damning conclusions of the Bartholomew committee. The detailed arguments for an Army air arm were laid out in a note written in the summer of 1940. The note argues that by raising their own air arm, including its 'own factories and the training of its own officers, crews and ground personnel' they would make 'no inroads on RAF resources.'⁴¹ That this was the major focus of the Army demonstrates just how much of an impact the defeat in France had and the long-term strategic situation with regards the use of British land forces on the European continent. Despite attempting to gain their own Army air arm, the Army did not specify just how long it would take to establish such a force and gain the expertise required for it to function effectively. The Secretary of State for War, Anthony Eden, looked to the solution reached in the field of naval co-operation in the inter-war period to resolve the problems faced by the Army. He stated that 'The creation by the Air Ministry of an Army Co-operation Command comparable in status to the Coastal Command would, I believe, be the most effective step which could be taken to ensure the concentration of effort which is required.'⁴² To ensure these requirements were met it was the Army Council that proposed the idea of an organisation that had the authority of an RAF command to oversee Army co-operation development in Britain.⁴³ This can be seen in the proposal noted below where the first question asked by the Air Staff is 'Do we agree with the concept of an Army Co-operation Command?'⁴⁴

In a proposal regarding this matter written by the Air Staff the responsibilities of No.22 (Army Co-operation) Group were laid out. This Group had wide-ranging responsibilities and these included the following: the administration and training of tactical reconnaissance squadrons with Home Forces; the command of Nos.1 and 2 Army Co-operation Schools; the supervision of the Air Observation Post (Air OP) development and command of No.111 (Army Co-operation) Wing. Discussions within the Air Ministry took place regarding the organisation of the command itself, the major discussion was whether the Command should comprise of two or three groups. The three group proposal would consist of 'an operational group

comprising the Army co-operation squadrons, a training and development group and the proposed Photographic Reconnaissance Group. The two group proposal would not include the Photographic Reconnaissance Group.⁴⁵ The proposal laid down by Eden that the AOC-in-C should be the adviser on Army co-operation matters to both the Air and War Ministries was rejected by the Air Staff. They felt that the

proper and logical procedure is for the Commander-in-Chief to advise their own Ministries and for the Ministries to advise each other. An AOC-in-C should not usurp the responsibility of the Air Ministry for advising the War Office on air matters. The established procedure is well-founded.⁴⁶

This move by the Air Staff can be interpreted in several ways: The Air Staff could have been looking to prevent the General Staff from attempting to form an Army air arm out of a potential Army Co-operation Command after receiving advice from the new organisation. It is also possible that the Air Staff were looking to side line this potential Command from the outset by controlling what advice the War Office were to receive and preventing their direct access to it. In studying the creation of Army Co-operation Command, Byford has commented upon the possible motivations of the Air Staff at this time.

Following the Bartholomew Report, the War Office proposed the creation of an Army Co-operation Command to facilitate air support. The Air Staff were concerned that this might be the first step towards the creation of an organic Army air force...although it did not support the concept, the Air Staff reluctantly concluded that an Army Co-operation Command – with a degree of separation from both the War Office and Air Ministry – might be a way of demonstrating the goodwill necessary to head off any further calls for a separate Army air arm.⁴⁷

The Air Staff saw two potential organisations for this new Command. The first of these possibilities was 'That No.22 Group and the Air Staff at GHQ [General Headquarters], Home Forces, should be combined into one headquarters, the Air Officer Commanding being the air adviser to the C-in-C, Home Forces and under his control for operations'. The second was 'That there should be an Army Co-operation Command (independent of Home Forces) under an AOC-in-C, with two Army Co-operation Groups, one operational and one for training. The three headquarters thus formed would be established on orthodox lines, and should contain a proportion of Army Staff Officers. The operational group would be under the control of GHQ Home Forces for operations'. The advantages and disadvantages of both proposals were also discussed. The first proposal's advantage was that it would be economical in staff and involve little reorganisation, it would however place the AOC in a difficult position. He would be

'responsible in part to the C-in-C, Home Forces, (namely for Army Co-operation squadrons), and would therefore in a sense be subordinate to him; whereas a large

part of his duties (i.e. those in connection with the training units) would lie outside the responsibility of the C-in-C, Home Forces’

Under the first proposal, the AOC-in-C would find locating his headquarters difficult. It would be impracticable to have his headquarters close or within GHQ. Part of his staff would have to be attached to GHQ and, as a result, he would have to divide his time equally between effectively two headquarters.⁴⁸

The advantages in the second proposal are that it fulfilled the requirement put forward by the Army that the commander should have the independent powers of a Commander. This organisation would also fit in well with the current RAF organisational structure. This structure was a mono-role command structure where each individual Command was responsible for an individual aspect of fighting.⁴⁹ The AOC-in-C would have free reign over the whole administration of Army co-operation interests and would be tasked with the primary role of the ‘development of tactics and techniques of air co-operation and support of the Army’. A Command of this nature would provide a ‘solid frame-work capable of expanding to meet any further Army Co-operation requirements’. The most pressing drawback to this proposal would be the expansion in staff officers, including Army officers, required for the Command to function efficiently.⁵⁰ The Air Staff had refined their ideas regarding this new Command. This proposed organisation would severely restrict the role of any prospective Commander-in-Chief. An Army co-operation operational group would be placed under GHQ, Home Forces, and a training group consisting of the Army Co-operation Schools, the Central Landing Establishment (CLE) and the Anti-aircraft and Searchlight Co-operation units would form a training group. Under these proposals the only complete control exercised by the new Command would be in respect of the Army Co-operation Schools of the Training Group. The new Command in fact would be mainly administrative and advisory in function. These proposals would restrict the powers of the prospective AOC-in-C and lend further weight to the argument that the Air Staff’s overriding aim in setting up this new Command was to sideline it as much as possible. The C-in-C of Bomber Command, Air Marshal Sir Charles Portal, also raised concerns regarding the new Command. He pointed out ‘that one of the tasks of the new Command would be to advise on types. If this led to the arming of certain units under Bomber Command aircraft not suitable for bombing operations against Germany, then he would deplore the arrangement’.⁵¹

The Air Staff countered the proposal noted above regarding the status of any potential new Command with regards to that of Coastal Command. Coastal Command was a fully operational Command. The AOC-in-C was responsible for conducting operations in the Atlantic Ocean against attacks by the German Navy against Allied merchant shipping. The Air Staff argued that no such operational role existed for an Army Co-operation Command. This would still be the case if the Germans had been able to make a successful invasion of Britain due to Army co-operation being provided by Army co-operation squadrons already attached to the Army. If further support was required in the event of invasion, it would be

provided by Bomber, Fighter and Coastal Commands, and not Army Co-operation Command.⁵² These Commands were the operational heart of the RAF and had experience of conducting operations. Bomber Command was responsible for conducting the strategic air offensive over Germany; Fighter Command had just won the battle for air superiority over the skies of south-east England in the Battle of Britain; and Coastal Command was involved in protecting Allied shipping in the Atlantic. If, however, an invasion attempt against Britain was launched, the operational priority for the RAF would be in the support of land forces to repel this. Army Co-operation Command would not form part of this as, when it was created, it was not, and was never intended to be, an operational force.⁵³

The head of this new Command 'would be responsible for implementing the policy decided upon by the Air Ministry and the War Office for the development of all forms of air support for the Army'. The General Staff believed that air support fell into two distinct categories: reconnaissance and close support bombing. They felt that with the proposed organisation reconnaissance development would 'be well catered for'. Despite the ideas in this area being developed, it was felt that the 'tactical reconnaissance group and schools which will be under the command of the Air Officer Commanding-in-Chief will do all that is required'.⁵⁴ The same was not felt with regards to close support bombing development.

The General Staff believed that this was the *raison d'être* of the new organisation and that if it was not given the powers and the necessary organisation, there was a very real chance that it would fail in its endeavours. It was conceded, however, that any such long-term training would not be at the expense of ongoing RAF operations. In order to give the new Command the powers, the General Staff felt was required for it, it was proposed to either make the AOC-in-C responsible for 'training medium bomber squadrons on close support duties or to incorporate a small bomber formation into the new Command'. If the AOC-in-C was given responsibility for training medium bomber squadrons, he would have direct access to the AOC-in-C, Bomber Command and AOC, Northern Ireland to arrange for training to be carried out, and was seen to be the better system for squadrons stationed in England and Scotland. If an operational bomber force was to be formed in Army Co-operation Command, it was argued that it 'would give the necessary weight to the close support side of the proposed organisation. The Command would be in the fullest sense an Army Co-operation Command'.⁵⁵

By the end of October 1940, after much fruitful discussion and with the Battle of Britain drawing to a close, both the Air and General Staffs were in a position to finalise the organisation and responsibilities of a new Army Co-operation Command. The creation of Army Co-operation Command was a matter for the Air and General Staffs, and due to the discussions regarding this matter proceeding with relative ease, the matter was never referred to the War Cabinet to be resolved.⁵⁶ This demonstrates how much the defeat in France had affected the RAF, and to a greater extent the Army. This new Command was to be organised along the lines detailed above where an operational Group would be placed under the

control of GHQ, Home Forces and Army Co-operation Command would have control over the training group.⁵⁷ This newly established organisation was more in line with the Air Staff's view than the General Staff's and would place Army Co-operation Command at a severe disadvantage throughout its existence. With the emphasis being placed upon developing Army co-operation by the Army Council, the Air Staff's motivations in establishing a non-operational Command with responsibility for experiments and training must be called into question. The commander of this new organisation would find himself disadvantaged in calls for resources against more established, operational Commands conducting operational roles against Germany.

In a directive to the AOC-in-C it was laid out that his Command would 'comprise all RAF units specifically engaged in Army Co-operation duties in Great Britain'. His main responsibility was to 'implement the policy decided upon by the Air Ministry for the development of all forms of air support for the Army'. In order to further the implementation of this policy the commander was to 'liaise with [the] Commander-in-Chief and Commanders of other RAF Commands, and Commanders-in-Chief, Home Forces and Northern Ireland...'⁵⁸ The Commander was to act as adviser to the Air Ministry only as had originally been laid out in the proposals put forward.⁵⁹ The potential problems associated with this idea has already been detailed above, and was to cause much friction between Army Co-operation Command, the Air Ministry and the War Office. The new Command was to be officially formed on 1 December 1940, and the AOC-in-C was to be the former head of BAFF, Barratt.⁶⁰ The headquarters of this Command was at Bracknell and the staff that made up the Command was, in the words of Carrington "integrated" – a new vogue word – with a mixture of Army and RAF staff officers.⁶¹ Initially the main function of the Command was the administration of a dozen Lysander reconnaissance squadrons that the Battle of France had shown to be obsolete.⁶²

One of the first actions conducted by Barratt was to establish his views on the work that had already been conducted in close support development prior to the establishment of his Command. Barratt authorised the distribution of the Wann-Woodall report to all squadrons within the Command.⁶³ The report produced from the experiments conducted in Northern Ireland had now become codified as basic doctrine, and due to the joint nature of the trials, it could be considered as the first piece of joint doctrine produced by the RAF and Army. The RAF's institutional distrust of theoretical solutions to problems, combined with the threat of invasion waning, meant, however, that the Wann-Woodall report was never accepted as official doctrine to be passed on to other Commands in overseas theatres despite the feelings of Barratt at Army Co-operation Command.⁶⁴ The further trials that were to be conducted could only improve upon the start that had been made.

Alongside the creation of Army Co-operation Command, the Air Staff established a Directorate of Military Co-operation (DMC), under Air Commodore Victor Goddard. This was to allow Army co-operation 'to have strong representation in the Air Ministry'.⁶⁵ This directorate was directly responsible to the Chief of the Air Staff, and would work in conjunction with other directorates

of the Air Ministry. Its establishment was to work primarily with the WO to frame the policy for the development of Army co-operation. Its duties would cover the following: 'provision for Army air requirements; co-operation with the Army at home and abroad and preparations of plans for the formation of air components for field forces as requisite Air Staff/Army matters affecting the Directorate of Combined Operations'. The DMC would be responsible for some parts of operational planning and would have no executive function in relation to operational Commands.⁶⁶

Conclusion

The way in which Army Co-operation Command was created hampered its abilities to a great extent in its role to develop Army co-operation in Britain between 1940 and 1943. The RAF made it as toothless as possible. This was a deliberate move on the part of the Air Staff in order to give the War Office the impression that the development of Army co-operation in Britain was being given a greater priority with the creation of a Command that specialised in this area. The War Office's expectations of this new Command were for an organisation that would not only be able to develop and enhance the development of Army co-operation in Britain, but would also be able to implement these developments in the field. In this they were disappointed as Army Co-operation Command would never be more than an experimental Command. This further hampered the development of good relations between the two Services, which was one of the responsibilities of Barratt and Army Co-operation Command. The continuation of bad relations between the Services can be directly traced to the War Office's actions in the wake of the Battle of France. The sustained political pressure placed upon the RAF through the Bartholomew Report forced the Air Ministry to act in a way that was not, in the long term, beneficial to either Service. The RAF in Britain, as a whole, showed little enthusiasm for Army co-operation ideas until the successful operations in the Middle East were conducted in 1942 and 1943.⁶⁷

Army Co-operation Command found itself starved of resources throughout its existence due to its non-operational status. This was a direct impact of the RAF being forced to create Army Co-operation Command. This made the role given to Barratt and his command even more difficult to fulfil. It was, however, able to further develop the theoretical ideas put forward as a result of the Wann-Woodall experiments. That it was able to take the ideas that emerged from the Wann-Woodall experiments and codify them into a basic doctrinal publication that was agreeable to both the War Office and the Air Ministry is testament to the potential ability within Army Co-operation Command. That this potential ability was not harnessed to a greater extent is due to the difficult position it was placed in due to its creation. It was viewed by the Air Ministry as a necessary evil that had to be created in 1940 in order to relieve some of the political pressure that they were under after the disastrous showing during the Battle of France. Army Co-operation Command could only develop its ideas in theory as it had no operational aspect and also due to the fact that land operations were not conducted from Britain until 1944. This made Army Co-operation Command's role that more difficult to achieve. As a result of this, Army Co-operation Command was able to develop basic theoretical doctrine but

was unable to refine these ideas in operations against the enemy. The testing of theoretical doctrine is essential in order to iron out the many teething problems that could not have been identified during exercises that will serve to enhance the ideas.

It was also heavily involved in the development of the Air Observation Post, which transformed the use of artillery in operations in the Middle East and Europe after 1943.⁶⁸ Despite this, Army Co-operation Command would be disbanded in July 1943; in reality, however, it was re-formed into an operational tactical air force in preparation for the return of Allied forces to the European continent in 1944. The make-up of this new tactical air support formation caused one of the largest arguments over the practicalities of providing British ground forces with air support during the Second World War.

Notes

¹ David Ian Hall, *Strategy for Victory: The Development of British Tactical Air Power, 1919-1943* (Westport, Connecticut and London, Praeger Security International, 2008), 57.

² David Hall, Lessons not Learned: The Struggle between the Royal Air Force and Army for the Tactical Control of Aircraft, and the Post-mortem on the Defeat of the British Expeditionary Force in France in 1940, in Gary Sheffield and Geoffrey Till (Eds.), *The Challenges of High Command: The British Experience* (Basingstoke and New York, Palgrave Macmillan, 2003), 113.

³ Charles Carrington, *Soldier at Bomber Command* (London, Leo Cooper, 1987), 26.

⁴ Williamson Murray, British and German Air Doctrine between the Wars, *Air University Review*, Vol. 30, No.3. (March/April, 1980). Available at <http://www.airpower.au.af.mil/airchronicles/aureview/1908/mar-apr/murray.html>. Accessed 18 May 2009.

⁵ Matthew Powell, *Army Co-operation Command and Tactical Air Power Development in Britain, 1940-1943: The Role of Army Co-operation Command in Army Air Support* (PhD Thesis, University of Birmingham, 2013), 50-1.

⁶ The Royal Air Force Museum, Hendon (RAF Hendon) Trenchard Papers, MFC 76/1/357 – Lecture VII Air Strategy. Lecture VIII – Principles of War. Lecture XII – The Value of a Centralised Air Force.

⁷ Sebastian Cox, The Air/Land Relationship – an historical perspective 1918-1991, *Air Power Review*, Vol.11, No.2 (Summer, 2000), p.1.

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¹⁰ Alistair Byford, Fair Stood the Wind for France? The Royal Air Force's experience in 1940 as a case study of the relationship between policy, strategy and doctrine, *Air Power Review*, Vol.14, No.3 (Autumn/Winter, 2011). Alistair Byford, The Battle of France, May 1940: enduring, combined and joint lessons, *Air Power Review*, Vol. 11, No.2 (Summer, 2008). John Buckley,

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¹² Powell, *Army Co-operation Command*, 42-5, 58-66.

¹³ An excellent summary of the myths that have surrounded the Stuka and the effects of German air support during this operation can be found in John Buckley, The Air War in France, in Brian Bond and Michael D. Taylor (Eds.), *The Battle for France and Flanders 1940: Sixty Years On* (Barnsley, Leo Cooper, 2001), 114-5. A detailed historical investigation of the Stuka has been written by Alfred Price and can be found at, Rise and Demise of the Stuka, *Air Power Review*, Vol. 3: No. 4 (Winter, 2000), 39-54.

¹⁴ W.A. Jacobs, Air Support for the British Army, 1939-1943, *Military Affairs*, Vol. 46, No.4 (December, 1982), 175-6.

¹⁵ Powell, *Army Co-operation Command*, 133-4.

¹⁶ With the exception of certain formations such as the 51st Division which had surrendered in France as the *Wehrmacht* consolidated their original gains made by advancing through central France.

¹⁷ Hall, *Strategy for*, 55.

¹⁸ Buckley, The Air War, 111-2.

¹⁹ Byford, The Battle of, 68.

²⁰ *Ibid.*

²¹ Hall, *Strategy for*, 56.

²² The UK National Archive [TNA], CAB 106/220, The Bartholomew Committee Final Report, 1940.

²³ A study of how the British saw German Army tactics can be found at: T. Harrison Place, British Perceptions of the Tactics of the German Army, 1938-40, *Intelligence and National Security*, Vol. 9: No. 3 (July, 1994), 495-519.

²⁴ Hall, *Strategy for*, 57.

²⁵ TNA CAB 106/220, Bartholomew Committee Final Report, 1940.

²⁶ *Ibid.*

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³⁰ David Syrett, The Tunisian Campaign, in Benjamin Franklin Cooling (Ed.), *Case Studies in the*

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³¹ TNA AIR 20/4447, Note on Air Operations in Support of the BEF in France during the Period 10th-31st May, Phase II, c. June 1940.

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³³ Byford, *The Battle of France*, 68.

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³⁷ The War Office department that was established to study Army co-operation (MO7) was aware that the *Luftwaffe* was an independent force in a note dated 22 July 1940. They were, however, unable to counter the prevailing opinion on this within the War Office.

³⁸ TNA WO 106/5167, Note on the War Office point of view regarding Close Support by MO7, 22 July 1940. Ian Gooderson, *Doctrine from the Crucible: The British air-land experience in the Second World War*, *Air Power Review*, Vol. 9, No. 2 (Autumn, 2006), 4.

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⁴⁰ TNA AIR 2/7336, Letter from Anthony Eden to the Archibald Sinclair, August 1940. The report from the experiments conducted by Wann and Woodall can be found at TNA AIR 39/142, Report on Experimental Training in Close Support Bombing, 5 December 1940 and TNA WO 106/5162, Report on Close Support Bombing Trials, Experimental Training in Close Support Bombing, 5 December 1940.

⁴¹ TNA AIR 20/3706, Note on the Army Air Arm, c. June/July 1940.

⁴² TNA AIR 20/2811, Memorandum by the Secretary of State for War – Air Support for the Army, 23 September 1940. Coastal Command has been the subject of several studies that most prominent of which are Christina Goulter, *A Forgotten Offensive: Royal Air Force Coastal Command's Anti-Shipping Campaign, 1940-1945* (London and Portland, Oregon, Frank Cass, 1995) and Andrew W.A. Hendrie, *The Cinderella Service: Coastal Command 1939-1945* (Barnsley, Pen & Sword Aviation, 2006).

⁴³ TNA AIR 2/5224, General Staff note on Training in Close Support in the proposed Army Co-operation Command, 2 October 1940.

⁴⁴ TNA AIR 20/2811, Proposal to form a new RAF Command at Home for Army Co-operation, 3 October 1940.

⁴⁵ *Ibid.*

⁴⁶ TNA AIR 20/4301, Proposals for an Army Co-operation Command, c. October 1940.

⁴⁷ Byford, *Fair Stood*, 51.

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⁵⁰ TNA AIR 20/4301, Proposals for an Army Co-operation Command, c. October 1940.

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⁵³ Powell, *Army Co-operation Command*, 133.

⁵⁴ TNA AIR 2/5224, General Staff note in Training in close support in the proposed Army Co-operation Command, 2 Oct 1940.

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⁵⁶ Powell, *Army Co-operation Command*, 131-2.

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⁶² Imperial War Museum, Carrington Papers 8/11/4. TNA PREM 4/14/9, Proposal for the Re-organisation of Army Co-operation with the RAF, c. November 1940.

⁶³ TNA AIR 39/139, Letter from Barratt, to Air Commodore Victor Goddard, 1 December 1940.

⁶⁴ Byford, Fair Stood, 52. Byford, *The Battle of France*, 69.

⁶⁵ TNA AIR 20/4301, Proposals for an Army Co-operation Command – Responsibilities of Directorate of Military Co-operation, c. October 1940.

⁶⁶ TNA AIR 20/4301, Proposals for an Army Co-operation Command, October, 1940.

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The United Kingdom's National Interest: A Framework & Definition

By Air Vice-Marshal Andy Turner

As the pressure on resources and people rises, the lack of strategic clarity could lead to the development of forces with out-dated equipment, the wrong training and inappropriate readiness. It could also lead to overseas adventures borne on short-term aims, in a vision vacuum and in extremis where activity may be absent a clear aim or the loss of life may be without a strong sense of purpose. To shape and prepare the Country and guide overseas activity, answering the Maréchal's question today remains as pressing as then. This paper will argue that sharper definition of the UK's vital national interest could lead to better national strategy, more stable aims and better shape (people, equipment and training) for the UK's security and defence capability. Without such definition, UK national strategy is difficult to cogently craft, which could lead to hunting operational aims, sub-optimal security capability structure and poorly focussed training. The paper will suggest that national interests could usefully be codified into and those that are 'vital' and that transcend politics, those 'essential' interests that are shorter-term and are likely to be political in nature and those others deemed 'desirable'. Within this, the paper postulates that the following may be a start point for debate over what constitutes the UK's 'vital national interests': to preserve the UK way of life; to protect the UK from catastrophic attack; to protect UK personnel, property and interests overseas; to protect and advance the UK's economic well-being; and to insulate the UK from the effects of overseas shocks. The paper recognises that these are not an explicit and absolute list and that future study might include analysis of: the balance between the UK interests' vulnerability and the strength of the UK levers of power to enforce and protect them; comparative analysis of the UK's national interests against near-peer powers and those in regions of competitive interest; further development and analysis of the concept of 'vital' versus 'essential' interests; the idea of diplomatic constructive in-distinction as a means of protecting wider interests with sub-optimal levels of national power; and a critique on the proposed interests codified above to gain weight around the idea and shuffle them towards policy definition. Above all, the paper seeks to start a conversation on a topic that has extremely limited policy and academic definition and yet 'UK's national interests' are regularly quoted in political messaging.

'De quoi s'agit-il?'

Maréchal Foch, 1916

Introduction

The 1648 Treaty of Westphalia reset national and international arrangements profoundly. Prior to it socio-economic groupings were drawn together by family, force and/or finance where identity was as much defined by the nature of the amalgamation as it was by history. However, since this point, increasing sophistication has led states to develop an identity of their own, drawing on all aspects of their forebears and, in some cases, their vision of the future. This 'national identity' helps shape the nation and state and points towards what values are the most sacred and must be protected. These vital 'national interests' are an expression of what is held most dear and, given the gravity of committing forces to mortal combat, what governments deem acceptable to go to war over.

But Maréchal Foch warned that 'the idea that morale alone could conquer was an infantile notion.' His prewar books *Les Principes de la Guerre* and *La Conduite de la Guerre*, in an almost Clausewitzian style, spoke in depth to the detail of tactics (the placement of advance guards, the necessity of protection, the elements of firepower, the need for obedience and discipline, etc). He taught the necessity of perpetual adaptability and improvisation and was heard to say '...regulations are all very well for drill but in the hour of danger they are no use...you have to learn to think.' This was summed up in an aphorism he made famous: '*de quoi s'agit-il?*' literally 'what's it all about?' Originally with reference to the Battle of the Somme, where the appalling loss of life balanced the absolute and unbound demand to save the third French Republic from the clear and existential threat of Germany, his meaning could not have been clearer.

One hundred years later the consequences of combat remain as profound as they were then. War's nature at the individual level remains a bloody, ultimate contest for survival. Whilst the clash is undimmed, we have benefited from an array of modern technological developments and the UK has shifted its tolerance for the loss of blood and treasure overseas downwards. This with the accessibility of the combat zone through modern media, the contemporary lack of exposure of our population to real adversity, the nature of war in general, scepticism around international involvement and the degree by which society has shifted from deference to reference has led to a thirst, penetrating throughout our society, for a clearer sense of purpose against which to measure our Armed Forces' sacrifice.

But politics, the pressures of modern Government, the inter-connected nature of society and an upwards shift in the military and human cost of involvement overseas has led to ever less clear definition of what our interests are. This at a time of significant changes in the balance of power – through an economic lens, between religious fissures, towards Asia, with nationalism, enabled by asymmetry, via cyber and space, by means of terrorism and less around water and hydrocarbon scarcity. Of course the lack of national interest definition provides political

freedom to navigate into and within international crises *à la carte*. But strategy should be based on vision and continuity through change; it should not fluctuate with the daily media diet and strategy is not 'what's in the PM's diary'; perhaps it should be more *table d'hôte*.

As the pressure on resources and people rises, the lack of strategic clarity could lead to the development of forces with out-dated equipment, the wrong training and inappropriate readiness. It could also lead to overseas adventures borne on short-term aims, in a vision vacuum and *in extremis* where activity may be absent a clear aim or the loss of life may be without a strong sense of purpose. To shape and prepare the Country and guide overseas activity, answering the Maréchal's question today remains as pressing as then.

Thesis

This paper argues that sharper definition of the UK's vital national interest could lead to enhanced national strategy, more stable aims and better shape (people, equipment and training) for the UK's security and defence capability. Without such definition, UK national strategy is difficult to cogently craft, which could lead to hunting operational aims, sub-optimal security capability structure and poorly focussed training. It will propose a methodology for defining national interests and a list which might reasonably be debated as a development of the UK's 2010 National Security Strategy (NSS).

Background

History

The idea of national interest stems from the Treaty of Westphalia which ended a range of conflicts between European parties and in so doing also defined the state. This new entity became the kernel for a range of new diplomatic practices and principles. One of which, touched on by Machiavelli and first used by France under the direction of its Chief Minister Cardinal Richelieu in the Thirty Years' War, was the idea of *raisons d'État* literally 'state interests'. In an attempt to balance religious power across Europe, Richelieu expanded the definition to be '...a mean between what conscience permits and affairs require...'¹ Carrying an initial malign flavour – 'the national interest' was a justification for war and that states could embark on wars of self-interest – the idea quickly gained momentum through the kinetically turbulent 18th and 19th Centuries. The pursuit of the national interest in this manner is central to realism – that states will always act aggressively and in their own interests. This came to a head at the 1815 Congress of Vienna when national interests were balanced across Europe through the redefinition of boundaries, apportionment of territory and the termination of conflict through treaty; this provided a long-term peace.

The sense of national interest and its perception has developed considerably since this time, poignantly now at the centenary commemoration of the Great War, none more so than at the time of the Treaty of Versailles. Here, perhaps prompted by Woodrow Wilson's Fourteen Points speech,² the sense that national interest was a reasonable justification for war shifted towards the concept of collective security – 'an attack on one is an attack on all'. The League of

Nations embodied this approach but it did not work not least because, ironically, states did not always find it 'in the national interest' to deter each other from the use of force. This dichotomy continues to lay at the heart of diplomacy today – the challenge between rationalising principle with policy.

Lessons from this Treaty and the management of the League played heavily at Bretton Woods as the bifurcated approach to international security emerged post Second World War. The establishment of the United Nations to consider matters *jus ad* and *in bello* against a body of internationally-accepted law and the creation of a security council and secretary general to collectively pronounce on state behaviour and hold them to account when they deviate from internationally-accepted norms. The parallel establishment of NATO and the Warsaw Pact in this era also framed security arrangements around the collective security concept. Whilst NATO and the Warsaw Pact can be said to have delivered their mandate (thus far to have avoided war through collective security arrangements), history suggests the UN has at times been seen as a point of reference and not necessarily deference by states; its authority cannot be said to be all-pervading.

Soon after the 1997 UK General Election the new Government commissioned the *Strategic Defence Review* to set out its initial defence policy and pass judgement on some key programmes, notably the Vanguard submarine and Typhoon aircraft. However, in a true MacMillan 'events dear boy, events' moment the conclusions of this review were rocked by 9/11 and the international reaction to them. This new paradigm led to the issue of the *SDR New Chapter* work in 2002.³ This was followed in 2006 by the cross-government counter terrorism strategy or 'CONTEST'; which included the counter-proliferation framework and hooks for acquisition in niche areas. Then, in 2008 the Government produced its *New strategic framework for the Foreign and Commonwealth Office* which underlined how national security depends on our work with other nations. Arguably it would have been more elegant for this to have preceded the SDR and CONTEST work.

A range of complex and contentious overseas operations and an array of growing threats followed 9/11 and throughout the last Parliament. This led to a national conversation on the absence of strategy and strategic thinking specifically. In part the debate was focussed on events of the time, but it increasingly began to fixate on the art of strategy, the making of it in Britain and the absence of a strategic culture, a cadre of experts and strategic documentation. The subtext was that the travails of the preceding 10 years might have been helped had there been a 'national strategy' and that responses to crises were isolated from longer-term aims and a wider national framework. Afghanistan is perhaps a case in point – an adjusting aim, varying investment and decisions more borne on personality than principle.⁴

Collectively, this led to the development of the UK's first National Security Strategy in Jun 08.⁵ A sound document, but the continued absence of a central, empowered guiding staff led to the House of Commons Defence Committee reflection in May 09 that national strategy '...

co-ordination at the political level is not as clear as it might be and...it only reaches the top of the in-tray at times of crises...⁶ A further Joint Committee report reflected '...the use of the Armed Forces must be rooted in the framework...the Defence contribution should be coordinated with the full range of instruments at home or overseas...'⁷

In May 10 the new government was confronted by the financial challenge and associated Comprehensive Spending Review (CSR), whilst a flurry of structural changes was introduced. This was at a time when global operations were at a peak, predominantly in Afghanistan, but in 25 other countries besides. At home Northern Ireland and home security continued to be significant and London 2012 was a growing thread. Emergent challenges also included the rise of terrorism, a spate of hostage situations, prolific piracy in the Indian Ocean and the imminent Arab Spring that continues to metamorphose today. At this time the security Ministries were conducting the Strategic Defence and Security Review (SDSR) and the preceding Administration's National Security, International Relations and Development (NSID) Cabinet sub-Committee, which met infrequently and debated issues on an event-related cadence, was replaced by a National Security Council. Supported by the small NSS Team, it had a new format, new committees, new challenges and new people. The Secretariat's role and remit was extensive – setting an annual agenda, building sub-committees and drafting papers; alongside Cabinet, the new NSC and its small industrious secretariat became an inner axle of Government.

In parallel, the narrative that '...we don't do strategy well, indeed that we don't do it...'⁸ had grown weight and led, just after the last election, to a line of analysis through the House of Commons Public Accounts Select Committee to enquire 'Who Does UK Strategy?' A number of esteemed commentators gave evidence that added colour, fact and perspective. All of which broadly aligned with the Committee's lament that we have '...simply fallen out of the habit, and have lost the culture of strategy making.'⁸ A number of recommendations followed, chiefly amongst which was that '...the recently established National Security Council and the post of National Security Adviser should have their remit widened to encompass National Strategy with a central coordinating role...'⁹ However, by the time these recommendations came to the fore, the National Security Strategy was in its final draft stage. Pace was driven by the need to synchronise and sequence Coalition policy reports and, in particular, the urgent need to publish a national security strategy prior to the SDSR and CSR reports, where deductions of the former should have informed the latter. Given this context, it is not surprising that the Oct 10 Strategy *Strong Britain in an Age of Uncertainty: The National Security Strategy*, which established a solid and sound basis for much of Government's security policy, was a good start, but could have been better in some areas.

However, this period must have felt similar to that in the United States around the publication of its first National Security Strategy (NSS) Report. Directed by the 1986 Goldwater-Nichols Act, which legislated that the President must submit a National Security Strategy Report to Congress,¹⁰ President Reagan delivered this first report on 1 Jan 1987, 93 days after the Bill was

signed into law. It is widely accepted that it was rushed, only reflected the current strategic thinking and made little or no attempt to describe the means of integrating the various tools of statecraft available to national security planners. Instead it emphasized the military instruments of power and did not document, much less integrate, strategy across geographic regions. The 13 submissions since the initial 1 Jan 1987 report have become increasingly more visionary in outlook, strategic in nature and inter-departmental in means.

Contention

But does having a clear, simple national strategy help? To provide independence, scrutiny and to ensure the UK Government was held to account, the Joint Committee on the National Security Strategy (JCNSS), comprising 12 Members and 10 Lords, was formed in Oct 10. It has reported three times, each time setting out significant criticism. The first report stated that '...there is no evidence that the NSS has influenced decisions ...if [it] is not guiding choices then it needs to be revised...' and '...there should be an "overarching strategy", a document designed to guide government decision-making and crisis management both at home and on the international stage...'¹¹ In publishing its second report the Chair, Rt Hon Margaret Beckett MP, said '...the last NSS, SDSR and CSR were (understandably) produced in great haste, and are the weaker for it. There is little sign of the forward planning needed to avoid those mistakes being repeated – still less of an approach to build consensus which could establish a sound foundation of long-term planning for our nation's security...'¹² The most recent report states that '...the NSC appears to have focused on operational matters and short-term imperatives, rather than long-term strategy...major strategic policy changes appear to have been made by individual Government departments without discussion at the NSC...'¹³

Symptomatic of these wider criticisms, but the central focus for this paper is the way in which the 2010 National Security Strategy defines the national interest. It talks of '...our enlightened national interest as being an inter-connected and mutually supportive sense of security, prosperity and freedom and that this is our national interest...'. It goes on to set out that '... our prosperity enables us to afford the skills and capabilities we need to advance our security from military training and arms, to technical and scientific expertise and equipment. Security and prosperity form a virtuous circle. Without the security of our land and infrastructure and the ability of our citizens to live their lives freely, the foundations of our prosperity, trade, industry, enterprise and education would be undermined. Above all, we act to maintain our way of life: to protect our people and the freedoms we have built for ourselves, and the values of our society and institutions...'¹⁴ Rightly, these are all-encompassing words, but greater clarity (another level of detail) would materially contribute to the understanding of what and where are the UK national interests.

This paper does not argue for an explicit definition of national interest that constrains or curtails state diplomacy or forecloses on security options. Certainly, greater precision in policy and diplomatic intent can be a risk; if Government identifies with too much accuracy its aim, intent and perhaps any red lines, it is likely to be exploited. The 2013 Syria debate in

Washington DC is instructive. Whether the threat of US action was misunderstood, calculated as to be unlikely or simply that President Assad's tolerance for pain and misery (on the Syrian people) was unbound is not clear. Governments are unlikely to issue similarly sharp policy direction again unless they intend to make the full weight of state power available to force through its will. Whatever the circumstances, states are likely to be clearer about what they mean and that they have the capability and will to back it up. Contemporarily it is interesting that, despite the grave and penetrating implications of the Ukrainian crisis, no red lines were drawn. This constructive in-distinction, the creative lack of clarity, is an art; it is part of diplomacy. Ivor Robert's edit of Satow's *Diplomatic Practice* sheds much light on this and is perhaps the pre-eminent handbook on the subject for practitioners. Perhaps this is most succinctly captured in his reflection that '...the strong do what they can, the weak do what they must...'¹⁵ Indeed, Sir Jeremy Greenstock's reflection on what the whole text has to offer is sharp: '...having clarity over the rules of the game, separating duty from stupidity, finding the right words when the sword might be the alternative, are all part of the practise of diplomacy at its finest...'

The absence of a detailed and explicit guiding national strategy has other value; it allows Government to derive policy aims as they encounter problems, measured acutely against the context, pressures and opportunities at the time. This approach offers the maximum flexibility, however the corollary is that long-term strategy, continuity of relationships, strategic influence and 'upstream engagement' all benefit from stable, enduring aims. In practice however, agile and responsive Government has a double edge. US Government insight on Riyadh's reflection of the West's support for the arrest of President Mubarak in Cairo was gloomy – 'friends for 30 years and gone in a day'.¹⁶ In here is the juxtaposition of strategy over tactics. A true strategy will find enduring values and purposes of our overseas aims where the investment in or protection of relations may be at the expense of the short-term. Certainly in the Egyptian context Israel sees it through this lens – a 30+ year territory-for-peace-and-security treaty was ceded in a night to a revolution. Whilst Israel co-operates very closely with Egypt, some 39 months and 5 regimes later there is continued uncertainty. These are just data points, but the principle applies elsewhere - in the Gulf region, across North Africa, in South America, within Europe and across the Near East - in the absence of strategy, how is the UK to best metre its limited power effectively and efficiently?

Indistinct policy is difficult to follow, even more challenging to plan for and very hard to deliver against. At the core of this is the substitution of ends, ways and means with values and principles; and long-term strategy with short-term direction. If strategy is to be the balancing of Ends, Ways and Means it is vital to have clear sight of the Ends first. The absence of a written strategy is not a good enough reason for change, but it could lead to wider implications, some of which may include:

- Short-term approaches that compromise longer-term aims
- Evolving intent and shifting objectives that require more time to deliver

- Unintended consequences – protracted involvement, opportunity costs and inequitable approaches
- Uncertainty amongst partner nations about how the UK might react to emergent security challenges
- Poor preparation of contingent capability – people, equipment, support, partners and proxies

These reflections are beginning to be played more publically, beyond the immediate security community; *Defence Strategy: Missing in Action*, the 8 Mar 14¹⁷ Economist leader is one of a number that echo the JCNSS 3rd report and touch on the absence of strategy and related purpose, meaning and role of the UK's Armed Forces post Afghanistan. More could be done to sharpen the National Security Strategy and define the national interests in particular if we are to avoid these pitfalls. '...The Coalition Government has given national security the highest priority...'¹⁸; to this end sharper definition of interests is vital.

A Framework

Structure

Sir Lawrence Freedman's treatise *Strategy* is seminal. It captures the ideas of strategy from the earliest writings to contemporary warfare and describes where strategy sits. He and others recognise that the purpose of the national strategy is to protect the national interests. But what is 'the national interest' or what are the interests of our nation? Although there is very little writing directly on the subject there is a surfeit of references to it but not definition. Commentators¹⁹ suggest that our interests are derived from the national character and its identity. This in turn is derived from both the notion of the nation and the state where the nation represents the families, tribes and allegiances that make up our peoples and the history, culture, governance and philosophy that defines the state.

In advising citizens on referenda questionnaires, the Office for National Statistics suggests that National identity is '...a measure of self-identity. A question on national identity allows a person to express a preference as to which country or countries, nation or nations that they feel most affiliated to...'²⁰ In his book *Patriots* that charts the history and acclaims the death of the British national identity, Richard Weight professes that national identity is 'how people define themselves in accordance with the nation they feel they belong to.'²¹ In the 1960s relationships that for over 200 years had sustained the British people began to erode: their relationship with Parliament and the belief that it was sovereign and essentially belonged to them as key component of a free society; their relationship with the armed forces and the idea of a superior British imperial world; their relationship with Protestantism and the idea of a free heritage; their relationship with manufacturing and their reputation as the world's oldest industrial nation; and finally their relationship with themselves as British and alike and growing more alike in fundamental ways.²² The perceived weakening of attachment to the nation and state is a possible effect of globalisation.

Structurally some have argued that local identities have become more important as nation states have been weakened by transnational corporations and political entities. Delanty speaks of a legalistic 'constitutional patriotism', that is commitment to and identification with constitutional norms rather than the state, territory, nations or cultural traditions, as the possible basis for European identity. As David Pearson notes, 'Nationality, 'race' and ethnicity are not natural categories or predetermined identities, they are political constructs with shifting memberships and meanings. They are ways of naming oneself and others, of representing identities and interests within different orders.'²³ Contemporary analysts often categorise nationalisms as more or less 'ethnic' or 'civic' - according to the centrality of claims referring to cultural and historical characteristics (shared origin, language, traditions) versus political aspects (territory, society, citizenship) in the definition of the nation.²⁴ Bruce Carrington and Geoffrey Short's paper *What Makes a Person British? Children's conceptions of their national culture and identity*²⁵ is fascinating for its rejection of a largely monolithic and ethnically undifferentiated description – a post globalisation state?

But in a broader sense what is the United Kingdom? In Nov 13 the Daily Mail declared '... Marks & Spencer is not just any shop...it is the British shop, as much a part of our cultural heritage as the Women's Institute, the BBC and the Queen...'²⁶ The Cabinet Office's 2010 *A Strong Britain in an Age of Uncertainty: The National Security Strategy* set out a more sophisticated sense of UK identity including: '...at the heart of many global networks; the English language gives us the ability to share ideas with millions – perhaps billions; connected to many parts of the world through our diverse population; our security, prosperity and freedom are interconnected and mutually supportive; security and prosperity form a virtuous circle; to maintain our way of life: to protect our people and the freedoms we have built for ourselves, and the values of our society and institutions...'²⁷ Better than the Daily Mail and incontrovertible but, as with the NSS's interest definition, these words offer little practical insight and analytical help.

Greater definition of our identity is possible and necessary if we are to gain a sense of what is vital to protect and importantly that will also carry the country's support. Perhaps a contemporary example of this linkage – from identity, to interest, to policy, to activity – is Russia and the recent Ukraine/Crimea crisis. The Economist charts the recent origin of Russian defence reform as '...nearly seven years ago...'²⁸ when in the aftermath of the Aug 2008 Georgian war, perceived in Moscow as partially successful but wholly a signal of defence capacity and capability decline, it declares that '...it is an article of faith for the Russian President that a great power must be able to project military force. He sees the modernisation of Russia's armed forces as a vital national interest...';²⁸ the position is sound, but this is part of the Russian identity and not an interest per se. The Moscow Carnegie Center suggests that the Ukrainian conflict is '...far more complex and difficult to fit into anyone's neat theory...'²⁹ But given the Georgian precedent and the re-equipment since, perhaps the internal chaos, Crimean secession and Donetsk disorder are simply opportunities that President Putin has exploited for wider Russian nationalistic gain.

Below this paper expands on the NSS's characterisation of national interest to show how identity might be developed usefully, so that interests might be determined. Through some critical lenses, inexhaustively, but beyond the BBC, 007, WI and M&S, these might include:

- **History** – an old, strong, trading nation state; maritime-orientation; one origin of democracy; post imperial; a history of engaging and being engaged in conflict and closely connected to the two World Wars; a once economic powerhouse, through contraction and into a new era of financial and technological leadership.
- **Cultural** – internationalised and partially integrated society; multi-ethnic; open, free and conservative.
- **Religion** – Christian origins, partially secular and generally welcoming.
- **Philosophy** – innovation, dynamism, mercantilism (nation of shopkeepers), free-market orientation and entrepreneurialism; fair-minded and rules-orientated.
- **Business** – anchored in the markets financially, with a limited industrial/manufacturing capacity; innovative in outlook, cutting-edge (internet, machinery, pharmaceuticals and infrastructure) in development, but not exploitative.
- **Opportunity** – class-based, partially accessible, less aggressive than the US 'frontier spirit'.
- **Status** – key representative place at all the critical World-governing bodies - UN P5, WTO, G7, G20, EU, NATO; generally club members, but on our own terms.

Certainly disputable, but if these represents a sense or part of our national identity, it is possible to develop a range of interests. These range from the fundamental right to free speech, collective protection from terrorist attack to the price of petrol and voting rights on local parish councils. Whilst all do contribute to the sense of who we are and what we aspire to, not all of these can be said to be so pivotal to our identity that they are worthy of uncompromising effort to protect; hence, it is sensible to think of these as on a spectrum of gravity and import. To simplify this, the paper proposes a scalable approach to the classification of our interests into vital, essential and desirable; loosely defined as follows:

- **Vital National Interests** – those that lead to the heart of our identity and way of life; these transcend politics, are generally long-lasting and are universal in public acceptance and agreement; these may include fundamental freedoms, cultural and ethnic tolerance, core elements of our national power and/or the structure and nature of our system of governance.
- **Essential National Interests** – political in nature; those that may derive from state-level commitments, possibly policy orientated, but that may be closer in horizon and less universally shared; these may include treaty obligations, alliances and other structural relationships; but they would continue to be critical to the maintenance of our way of life and the extent of people's aspirations.
- **Desirable National Interests** – almost by exclusion, desirable national interests represent everything else that contributes to and helps make up the nation and state as we see it; conceptually, they could curry only fractured and marginal sponsorship from elements of the

country and public; they may be temporary in nature; but generally they are too diverse and expansive to warrant closer definition.

This classification, and Weight's analysis in *Patriot*, suggests some variation by and over time. In classifying interests in these 3 groups, there is likely to be time and political cycle-based variation. It feels right that as a nation evolves, so will its interests. Indeed, the changes to UK's interests (culturally, economically and organisationally) have been profound since July 1945. The Empire has largely been ceded. The fabric of the country – the class system, education and welfare support - have changed dramatically. The crushing post War financial position forced the country to look very differently at itself - how it generated cash flow and GDP growth. Little of the pre-War industry was untouched in the post War years and manufacturing has been replaced by a service-led commercial society. The country has experienced the deep enrichment of immigration in different waves since 1945. Numerous global geo-political shocks have shaped our outlook some of which include: the 1956 Suez crisis, the 1962 Cuban missile crisis, the 1989 fall of the Warsaw Pact and Cold War, the 1992 exit from the ERM, the 1995 partial peace in Northern Ireland, 9/11, the 2008 financial crash and most recently the 2010 'Arab Spring'; these have all shifted our national priorities to protect our way of life, institutions and spirit. It is self-evident that further and future adjustment, to both identity and interests, is inevitable. Finnemore spells this out when she says that states change over time as will their preferences and interests.³⁰ Given this, it would be wise to cater for such change and factor analysis, re-definition and publication into our strategic cadence; the quintennial review of NSS and SDSR may be the next most appropriate time to do this.

National scale and relative power (between peers and adversaries) have a role to play here too. It stands to reason that the greater the power of the state, the more freedom it has to pursue and protect its national interest; the smaller, the lesser. For example, the recent annexation of Crimea from Ukraine was clearly against the incumbent Ukrainian national interest (albeit as expressed by the acting President Oleksandr Turchynov after the Ukrainian Parliament ousted Viktor Yanukovich on 21 Feb 14). However, Ukraine's relative size to Russia and the absence of other states willing to help protect their interests (territorial integrity, strategic resources (bases, access and facilities) and the legitimacy of the state) meant that Ukraine could not resist Crimean secession to Russia. Conversely, the Chinese imposition of East China Sea Air Defense Identification Zone in the vicinity of the Senkaku islands led immediately to the 26 Nov 13 planned passage of USAF B-52 aircraft directly through it in an act (of defiance) protecting its (and others) right to free passage in international airspace. Whilst any state may establish its sense of national identity and interests, they matter little if its levers of power are inadequate to enforce its position.

Is it the case that the definition and projection of explicit national interests are a luxury for large states, a fantasy for small states and are conscience-challenging for medium states? In this context the UK is neither a large nor a medium state, but somewhere in between. Its levers of power often deny an ability to independently act without the support of others, bar some

circumstances where national resourcing has been focussed on a specific goal; protecting the Falkland Islands might be a case in point. Therefore, the UK will have to continue to box cleverly if it is not to be found wanting in either capability or the will to act if challenged. We will have to pick the timing and ground of any unilateral robust stances with some care and carefully align Allies, partners and proxies where there is a risk of overmatch (in hard power, fiscal resilience, endurance in any sense and legitimacy). Self-evidently our levers of power and their connection to our national interests are a critical link for force structure and capability definition for all of our security Departments. Further study here, to establish the linkages and dependencies, would add real value.

Before proposing what the UK's vital national interests might be, it is perhaps valuable to set out what they are not. Interests are things we might seek to protect. At the most facetious level the UK's interests are not 'what's in the PM's diary' as one senior official has once quipped nor are they concepts, principles or goals. Our interests do not include membership of international institutions; although they may be served through membership. Our interests are not activities – securing facilities, stationing forces, training partners – but again they may be secured through these activities. At another level, if definition is to have any relevance for policy development, our interests are not theoretical or ethereal concepts, nor are they principles or behaviours – although again these may contribute towards the protection of our interests. As such, they cannot be prosperity, World peace, poverty eradication, climate stability, halting the spread of HIV/AIDS and/or providing universal primary education. High-minded and valid, these are unlikely to be interests states would defend with unbounded resource.

National Interests – A Proposal

So if national interests are derived from our identity, that there are broadly 3 levels (vital, essential and desirable) of longevity, continuity, political bias and popular approval and that they will vary over time, it is possible to craft a list. So what follows is a debate-opener – six vital and a selection of essential national interests, no prioritisation and some supporting characteristics against each.

Vital UK National Interests

Probably the first set of ideas that derive from the concept of our identity is the rights of the individual. Progressively codified in the 1215 Magna Carta, the 1628 Petition of Right, the 1689 Bill of Rights, 1998 Human Rights Act and the 2010 Equality Act these protected and assured the human rights and fundamental freedoms of our people. One could express this as: freedom of expression and movement, to serve and worship; from suspicion and control; of secularism, tolerance and ethnic assimilation. It also suggests the right to life, justice, protection and democracy. The Parliament Acts of 1911 and 1949 and the 1998 devolution Acts assure the survival of a constitutional monarchy government, regional institutions and representative bodies. In sum these lead to the idea that it is a British vital national interest to **preserve our way of life** in all its facets.

It follows that the first responsibility of government is towards its people and to assure them from interference by and from other states – security is its first and primary role. But it is probably reasonable to see this as bifurcated – home and away. At home citizens expect to be protected from a catastrophic attack, which requires *inter alia*: a cutting edge intelligence capability; survival against chemical, biological, radiological and nuclear attacks; and protection against cyber and conventional attack. This would require the development of resilient border controls, response, and organisation and the development and protection of the will of the people. One would also expect Government to develop redundancy in areas of critical national assets and capabilities. So another British vital national interest might be the **protection of the UK from catastrophic attack**.

‘Away’ we must ensure there is a security guarantee to our citizens, property and interests overseas. For citizens this would require timely consular advice, direct support and, if necessary, evacuation. The Government has been explicitly clear, most recently in endorsing the Falklands sovereignty referendum and in the UN, that our overseas territories will retain the right to self-determination of their sovereignty and associated citizenship. Many of our critical national assets (hydrocarbons, critical minerals, internet nodal points, etc) reside overseas and therefore UK support to those Allies and partners who govern, oversee or enable supply of our critical national capabilities might also be a vital national interest. Therefore, the **protection of UK personnel, property and interests overseas** could be a British vital national interest.

The UK’s fundamental well-being is derived from our wealth which is reflected in our GDP and driven by commercial and sovereign activity. Over the last 50 years, as manufacturing and heavy industry has progressively dropped back, the financial sector has become a particular engine of our economy. Without cash flow, capitol for investment or liquidity, the UK Government would very quickly grind to a halt and individuals’ ability to go about their business would be affected almost immediately. The banking system, access to cash and the seamless way with which we conduct individual transactions are vital to the UK. In addition, on an international level, the way in which the World is financially structured, with controls, risk weightings, transparency and standards is similarly important. This encapsulates the World Bank (WB), International Monetary Fund (IMF) and World Trade Organisation (WTO) as part of this structure. We have seen, through the 2008 financial crash, just how quickly and profoundly a shock in this area can have far-reaching and long-lasting effects. Therefore, the **protection and advancement of the UK’s economic well-being** and the associated structures might well be a vital national interest.

However we view the World, state borders are less hard than they were 20 years ago given the all-penetrating nature of the internet, global commercial activity and the degree to which the World is accessible to all. Borders that previously would have offered some protection now generally won’t. This suggests that we are vulnerable at home to shocks in far-away places. Self-evidently, these events are not predictable, but insuring and insulating against their effects – building resilience, influence in places of uncertainty and unity of perspective in

supra-national bodies (UN, *et al*) – can help to attenuate their effects. In regions where there are significant British interests (large expatriate community, financial centres, commercial hubs, hydrocarbon reserves, areas of known trans-national terrorism fecundity, etc), strong, capable, interoperable and like-minded Allies and institutions (HMG's Building Stability Overseas concept) can mitigate risks. In other areas, the development of a network of strong partners, proxies and surrogates in the vicinity of our overseas national interests might be a key approach. Whilst not a conventional security interest, climate change could lead to an array of fragile outcomes³¹ around which we may wish to consolidate opinion and lead international policy. Hence, a strong/leading role in Global governing bodies (UN, WB, IMF, WTO, G7, G20, EU, NATO, the Elders, etc) all could be central to the preservation of stability at home, through stability overseas. Security and prosperity do form a virtuous (and vicious if not protected) circle;³² therefore, the **insulation of the UK from the effects of overseas shocks** might well be a core vital national interest.

Essential UK National Interests

If the above five represent interests that would carry consent across the country and against which we should place considerable effort to assure against their demise, there are other interests that sit below this level. In some areas 'essential interests' are those that have not yet become vital, but they may become so. Hence, some proposed below are an extension of those deemed vital above. Other essential interests may lie where public consensus is less solid; these might include emergent issues (climate change may be one), political issues (such as immigration, secularism, etc) or those which support or directly enable the vital interests such as a World-class education system (schools, colleges and universities), state support of a commercial sector (cyber, submarine building, nuclear industry, etc) or the development of trade and commerce links (bi-laterally, multi-laterally through institutions or business-to-business).

The following is a non-exhaustive set of examples, some from the World Development Report 2014,³³ that might be considered essential UK national interests, but do not need further codification at this point. The first area that might be considered an essential national interest is that of **culture** where interests might include: promotion of international police and judicial standards to combat crime and corruption; promotion of enforceable laws against racial or ethnic discrimination; secure and respected private property rights; promotion of regulations for consumer protection and environmental preservation; and promotion of the Commonwealth to advance UK values and standards.

Another area is that of **security** where interests might be: development of risk-focussed bi-lateral sy relationships with key nations and states; denial of trans-national terrorist safe havens; projection of disaster mitigation skills and capacity in vulnerable areas; protection of critical UK industrial manufacturing capability (maritime, aircraft, missile and CBRN manufacture); promotion of essential security industrial partnerships at home and overseas; investment in key partners' military and security capacity building; and driving innovation, resilience and redundancy in our energy sector and its reserves.

Under **finance**, our essential national interests might include the promotion of: macro-prudential regulation to lessen financial crises and avoid bailouts; national financial strategies that addresses inclusion, depth, and stability; transparent and credible monetary policy based on price stability; provision for natural disasters, financial crises, and pensions of aging populations; and regulations to foster consumer protection and competition among financial institutions.

Commerce is an important area too and possibly an area of essential national interest that might include: secure and light-touch trading freedoms with key partners – TTIP, EU, Northern Gp, others; development of an attractive financial climate for international business; development of a series of UK research and development hubs for industry; enhancement of UK industries (pharmaceutical, artificial intelligence, quantum computing, etc); development of World-class transportation architecture at home; and promotion of growth and inclusion policies for impoverished regions overseas. Closely supporting all of the above, **education** could also be an area of essential national interest; this might include: maintenance of a World-class UK schools and university system; the development of the optimum UK skills and employment climate; and the development of an active, cutting-edge think tank community.

All of this needs more detailed assessment, analysis, greater codification and debate. Some of the essential interests may be deemed ‘desirable’ in nature and therefore fall away from this list; others may become vital in the sense of consensus and the need to protect them. As stated earlier, these interests will change with Global context, geo-political tremors and the parliamentary cycle to name but a few influences. The key is to be clear as to what they are, configure policy towards a set of priorities to assure ourselves they are protected and be clear with the public where the limits of our levers of power lie. As a medium-large state we may not have the power and influence at home or internationally to do as we please. Therefore we must apply rigour, sharp analysis and focus to those activities we choose to do. Where we cannot act alone, we must garner international support, through influence and cogent debate to achieve our aims and assure against those national interests that are most dear.

Conclusions

Summary

This paper has suggested that the evolution of a suite of National Security documentation represents a big and necessary step to codify and drive the state’s security architecture. This is especially valuable as the net capacity is reducing and therefore there is a need for closer co-ordination. Of the documentation produced thus far there is a clear expansion in the depth, sophistication and utility of the thinking, policy and direction that it encapsulates. However, as the various Parliamentary bodies and a number of external commentators have suggested, there is room for improvement if Government is to drive true strategy, address emergent issues in the context of a wider plan and build relationships, capability and influence around the World to meet its aspirations. The next opportunity to develop some of this

thinking and advance the security cannon is the 2015 quintennial iteration of National Security Strategy development and the subsequent Foreign, Home and Security reviews.

Whilst there are many areas that would warrant some adjustment, most of which would benefit from greater study, this paper has focussed on the definition of the National Interest. It has argued that our interests derive from our sense of identity and that this stems from the sense of where our peoples have come from, where they want to go to and what constitutes our state. Interests are likely to be in constant flux and vary as the assimilation of ethnicity, culture and peoples into the country changes. They will also vary according to contemporary shocks (which have the habit of occurring at least every 10 years) and against the World's challenges such as climate change, financial stability and international trade. Our interests have changed and will continue to change.

This variation over and by time is a further driver to understand them in more detail – without such acuity we may chase an ill-defined target and insure against a range of unnecessary capabilities, functions and risks. At the same time our interests do drive our approach to home and away policy pronouncements, both of which must be tuned to our national levers of power. We may not be able to afford to be too strident in areas where we have little leverage if challenged. It is perhaps worth restating that simply defining the national interests could be conceived as a luxury for large states, a fantasy for small states and conscience-tugging for medium states; the UK straddles the gap between the first and last. Hence, the quintennial reviews of NSS and SDSR are an ideal time to take stock, re-assess national priorities and clarify where our policy position is on resourcing resilience, developing capability and driving forward a wide agenda of growth.

It is also true that there are a range of levels of interests. In truth it is a continuous spectrum of policy aspects Government may wish to pursue, but for simplicity have been codified them into 3 levels. Those vital national interests judged to be those that transcend politics, endure beyond parliaments and constitute the very fabric of our way of life. Slightly below are a range of policy-driven interests, which may vary over time and may not be universally agreed amongst the public, but are by the majority, titled essential. Then there is 'the rest' - a category that does not bear greater definition, is unlikely to drive a resourcing position in any Department, but may constitute a critical part of life for some of the population.

Recommendations

This paper recommends that greater definition of the national interest could help strategy development, the preparation of capability and decision-making. It suggests that national interests could usefully be codified into those that are 'vital' and that transcend politics, those 'essential' interests that are shorter-term and are likely to be political in nature and those others deemed 'desirable'. It proposes five vital national interests for the UK which include: to preserve our way of life; to protect the UK from catastrophic attack; to protect UK personnel, property and interests overseas; to protect and advance the UK's economic well-being; and to

insulate the UK from the effects of overseas shocks. This paper certainly recognises that these are a proposal and not an explicit and absolute list.

This paper also recognises that further work may be commissioned to develop these ideas further. Areas of future study might include further analysis of where the UK sits with respect to its interests and levers of power to govern the conceptual employment of state power (diplomacy, information, military power and economic leverage). There would be value in greater analysis of UK national interests against those derived in other states, particularly near-peer powers such as France and Germany and those in regions of interest such as *inter alia* Argentina, Nigeria, India, Japan and Korea. Further analytical work might usefully be expended on the development of the concept of vital versus essential; the paper proposes a boundary – politics or transcending politics, but there may be elements that straddle this and therefore influence or distort the overall findings. There would be benefit also from analysing further the concept of constructive in-distinction mentioned earlier - the degree to which definition closes down political options and is therefore undesirable is unclear. Finally, a critique on those interests codified above as vital need analytical reflection if they are to gain weight and be borne into policy.

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What is the Utility of the Fifth Domain?¹

By Squadron Leader Paul Withers

The increasing importance of cyberspace for military operations has led to the United States Department of Defense classifying it as the Fifth Domain of Warfare. However, cyberspace lacks the explicit physical properties of land, sea, air and space, and as a consequence its classification as a warfighting domain is controversial. The cyber debate is replete with hyperbole and ambiguous terminology and there are calls to limit the militarization of cyberspace. The critical dependence of Western military forces on microprocessor technology inevitably means that exploiting this domain is viewed from the dual perspectives of opportunity and vulnerability. But does it make any sense to classify cyberspace as a domain? This paper assesses the utility of the Fifth Domain with the aim of understanding what 'domain status' means for military forces, how existing theories of war apply to the new domain, and the practical implications of integrating cyberspace operations into warfare.

Introduction

'Is cyber really a domain? Like everyone else who is or has been in a US military uniform, I think of cyber as a domain. It is now enshrined in doctrine: land, sea, air, space, cyber. It trips off the tongue, and frankly I have found the concept liberating when I think about operationalizing this domain.'

General Michael Hayden²

Cyberspace has formed part of the National Security debate for over a decade and the utility of operations in cyberspace continues to be hotly debated. In 2010, cyber security was classified as one of the UK's four 'Tier-One' risks to National Security, reflecting a level of concern regarding the damaging effects of crime, espionage and warfare enacted in and through cyberspace.³ The US has been developing its pan-government response to the cyber security threat for a number of years and part of that response has included the development of the organisations, concepts and doctrine to define cyberspace as a domain of warfare.

Historically wars were fought in two domains, which corresponded to the physical environments of Land and Sea. At the beginning of the 20th Century powered flight enabled the third environment, Air, to become a domain of warfare from the First World War onwards. In the latter half of the century, the exploration of Space led to the exploitation of the fourth environment for numerous peaceful purposes, but also as a warfighting domain, used for the purpose of supporting, enabling and potentially conducting military operations. More recently a fifth domain has been identified: Cyberspace. Hayden's question, 'is cyber really a domain?' is an important one in furthering the now well-worn debate surrounding 'Cyber War'. Most cogent argument now casts aside alarmist and fanciful ideas of future war being fought solely or even predominantly in cyberspace. What remains is the need to add clarity to the role of cyberspace across the diplomatic, military and economic levers of power.

For the military instrument, cyberspace has found its way into US doctrine as the Fifth Domain of warfare. However, the classification of cyberspace as a domain is in itself steeped in controversy. Cyberspace differs from the other domains in that it is not a physical environment and its physical manifestations arguably exist across the other domains; it is neither wholly physical, nor is it completely virtual. This raises questions regarding the extent to which something that is not entirely tangible can be somewhere where battles are fought and won.

This paper will address the central question 'What is the Utility of the Fifth Domain?' In doing so it will consider both whether the concept of a fifth domain is meaningful in a semantic sense and beyond terminology, it will determine the extent to which cyberspace offers utility as a domain of warfare. It will examine whether or not the fact that the Fifth Domain is 'enshrined' in US doctrine is enough to give credibility to the concept or, even if the doctrinal definition is flawed, whether that is of consequence for the development of cyberspace as a tool of warfare.

The argument is presented in five steps. First, it will define the terminology that bounds the Fifth Domain and the emotive and controversial term 'cyber war.' It will examine academic and US-doctrinal definitions and determine the reasons for treating cyberspace as a domain of warfare. It will argue that there is utility in the terminology of the Fifth Domain and for a number of practical reasons it is sensible to treat cyberspace as a domain of military activity that is separate from land, sea, air and space. It should be noted that UK doctrine now classifies land, sea, air, space and cyberspace as 'environments' rather than 'domains.' This paper accepts the difference in doctrinal approach, but as it is largely based on academic work that refers to cyberspace as a 'domain', the term *domain* will be used.

Second, the importance of cyber defence as a consequence of cyber dependence will be considered. Developed nations and their military forces are particularly dependent upon cyberspace and as a consequence, it is not sufficient to develop effective offensive cyber capabilities. Modern weapons platforms rely upon embedded processors and communications networks and the advanced technology that gives them their advantage may also be their greatest vulnerability.

Third, emerging ideas of war in the Fifth Domain will be considered in the context of some of the theories of war in the traditional domains. It will argue that whilst there is currently a lack of cogent Fifth Domain theory, many of the concepts of existing theorists apply to the new domain. Of equal importance are the lessons that can be learned from the errors in early theory, particularly the parallels with the emergence of air power and the excessive hyperbole of its proponents. Similarly, early claims of wars being fought solely in cyberspace replacing traditional warfare are flawed and detract from the true efficacy of cyber operations as an instrument of power. However, the more recent concepts of 'parallel warfare' offer a possible theoretical basis for cyber operations to complement traditional kinetic operations. Cyberspace cannot offer the lethality or coercive nature of traditional weapons, but its characteristics may give options that can contribute to the overall military aim.

Fourth, consideration will be given to the practical utility of cyberspace operations. The paper will argue that the characteristics of cyberspace and 'weaponised code' offer reversible effects that have significant disruptive potential, despite their lack of destructive potential. The characteristics of 'cyber effects' will be examined with the potential for their use in specific military applications. The argument will balance the advantages and disadvantages of choosing a cyberspace-derived course of action, including the issues of achieving an appropriate degree of assurance of the efficacy of cyber-effects and their legal implications.

Finally, the paper will conclude with an overall assessment of the utility of the Fifth Domain. It will argue that the concept of a warfighting domain is valid as a means of developing cyberspace in the context of 21st Century armed conflict. Future warfare is unlikely to be conducted solely in cyberspace, but Fifth Domain operations are, and will remain an integral

part of warfare. As a consequence, this paper will therefore contend that there is significant utility in the Fifth Domain.

Defining the Fifth Domain

In attempting to make an assessment of its utility, it is first necessary to define the Fifth Domain. Unlike the physical domains, cyberspace is not an entirely tangible entity whose limits can easily be quantified. The acceptance of the term 'Fifth Domain' in US government and military circles does not in itself affirm the existence of a 'cyberspace domain'. In discussing an earlier but related concept, the so-called Revolution in Military Affairs, Colin Gray cautions against the 'nominalist fallacy'; the fact that something is given a captivating name increases the debate that surrounds it, which in itself has a tendency to give substance and credibility to the concept.⁴ For the Cyberspace Domain to be more than just fallacious terminology it needs to have real substance and Libicki, whilst arguing against the Fifth Domain, calls for 'the rectification of terms: making the name of the thing match the nature of the thing.'⁵ This section examines the terminology of the Fifth Domain and will argue that despite it being a problematic concept, it is appropriate and meaningful for cyberspace to be considered a domain of warfare.

A fundamental problem for applying clarity to the Fifth Domain comes from the use of poorly defined and ambiguous language. Michael Hayden argues: 'Rarely has something been so important and so talked about with less clarity and less apparent understanding than this phenomenon.'⁶ The term 'cyber' has been adopted into both popular and military culture with broad and inconsistent meaning. Its origins date back long before the 'information age'; Norbert Wiener's World War II work on predictive characterisation of attacking aircraft profiles, in order to improve the performance of anti-aircraft artillery, led to him coining the term 'cybernetics' in 1947.⁷ Wiener 'designated what he hoped would be a new science of control mechanisms in which the exchange of information would play a central role.'⁸

The linguistic origin of 'cyber' as a shortened version of cybernetics, 'from the Greek... meaning good at steering'; is far removed from the adoption of cyber into common English usage.⁹ The dictionary definition of 'cyber' is 'relating to or characteristic of the culture of computers, information technology, and virtual reality'.¹⁰ The term *cyberspace*, which was originally coined in science fiction by William Gibson, was one which was originally intended to have 'no real semantic meaning'.¹¹ For cyberspace to have credibility as a domain of warfare, the term requires clear and unequivocal meaning. The dictionary definition of cyberspace is 'the notional environment in which communication over computer networks occurs'.¹² Defining cyberspace as 'notional', i.e. imaginary or hypothetical, does little to enhance its credibility as a place where military operations can occur. However, the US military definition of cyberspace sets a more concrete basis for its case for the existence of a domain:

'A global domain within the information environment consisting of the interdependent networks of information technology infrastructures and resident data, including the

Internet, telecommunications networks, computer systems, and embedded processors and controllers'¹³

This definition contains a number of important elements for setting the bounds of the domain. First, it includes both the infrastructures and the data. It is therefore not simply defined by physical devices but also by the software and data that resides on hardware and transits through it. Second, the domain includes *but is not limited to* the Internet. This is a crucial aspect of defining the domain; the entities that military forces may wish to attack and defend extend beyond the bounds of the Internet. Communication systems, networks, weapons platforms and devices of military interest may be physically or logically isolated from the Internet or connect only fleetingly or indirectly, for example by a human operator using a storage device to transfer files. Arguably the use of the word 'interdependent' in the definition is misleading; isolated networks may not be dependent on other networks, yet still be part of the cyberspace domain. Third, the domain resides in the 'information environment'; this distinction between a cyberspace domain and an information environment is a result of a historical doctrinal and semantic debate within the US military, a debate that is also reflected in the development of UK doctrine. The lack of consistency in terminology is a symptom of the difficulty in articulating a coherent explanation of cyberspace. The US Department of Defense (DoD) has thus far, 'issued at least twelve different definitions of what it thinks of as cyberspace.'¹⁴ The UK Defence Joint Operating Concept classifies land, sea, air, space and cyberspace as 'environments' rather than 'domains', arguing that the word domain 'implies some form of dominion which we would only have fleetingly on operations (sea or air control)'.¹⁵ The dictionary definition of *domain* as 'an area of territory owned or controlled' validates the argument about 'dominion', although the alternative definition of *domain* as 'a specified sphere of activity or knowledge' arguably supports the US terminology.¹⁶ Whilst this semantic difference is acknowledged, this paper prefers the term *domain* simply because most of the published literature about cyberspace is of US origin or reflects US military doctrine.

This leads to the crucial question of whether the US DoD 'domain definition' is little more than an example of Gray's 'nominalist fallacy'.¹⁷ On one level, naming cyberspace as a domain of warfare seems arbitrary; other specialist endeavours within the military might equally have a claim to domain status.¹⁸ In order to assist in countering this possibility, perhaps the most unhelpful and ambiguous term of all, 'cyberwar', needs to be examined. Although the hyperbole around cyberwar has helped generate a healthy debate, the evidence suggests that it is a largely meaningless concept, based on the norms of understanding around the nature of war. Thomas Rid argues that for something to be considered *war* it must meet the Clausewitzian criteria of being violent, instrumental and political.¹⁹ Where 'cyberwar' most notably fails this test is in its capacity to be violent. However, military operations include acts that support warfare and, whilst not being violent *per se*, contribute to military operations, i.e. they support and enable violence or the threat of violence. Examples include intelligence, surveillance and reconnaissance, information operations and numerous other

enabling activities. Cyberspace operations mainly fit into this category of non-violent enablers of warfare. However, the spectrum of cyberspace operations does push up against the boundaries of violence in its ability to cause destruction to equipment and data. The violence inflicted by a cyberspace operation may be indirect and complex; it is often not the easily identifiable 'use of force' apparent with a kinetic weapon.²⁰ This paper therefore supports Rid's view that due to cyberspace operations' inability to be violent *per se*, 'cyberwar' cannot exist. However, cyberspace operations are, and will remain, an integral part of warfare.

Rid argues against the existence of a Fifth Domain for a number of fairly compelling reasons.²¹ The origin of Fifth Domain terminology was originally just a 'US Air Force lobbying gimmick' although he concedes that this fact in itself does not counter its utility.²² Within the UK, in the context of austerity and significant defence cuts, the Strategic Defence and Security Review of 2010 announced a National Cyber Security Programme, allocating £650 million of 'new' money for cyber security.²³ It is therefore understandable that those in Defence would join the 'moths' around the cyber 'flame'.

Rid also contends that 'code-triggered violence will express itself in the other domains.'²⁴ However, this in itself is little different to the interdependence of the other domains. 'Aircraft-triggered violence' often has its effect felt in the land domain. Dropping an air launched weapon on a ground target demonstrates the interdependence and synergy between the domains. Indeed, the targeting of a modern precision weapon is also highly dependent on the space domain and may involve a controller on the ground guiding the aircrew. Conversely, whilst Fifth Domain effects must normally be felt in another physical domain, where computer code is used to permanently destroy data rather than a physical device, the effect remains in the cyberspace domain, though it may ultimately be felt in terms of a cognitive effect on the operator of the computer system.²⁵ The interdependence of cyberspace with the traditional domains, rather than specifically being part of any one of them, strengthens rather than weakens its case for being a separate domain.

Often effects are intended to be cognitive rather than physical in nature. This is true of both kinetic and cyber action. Whilst bombs may be dropped to cause physical harm and damage, they may be used to shatter the will and cohesion of an enemy, to deceive or to sow confusion. Effects in cyberspace arguably have significant utility across what Tibbs calls 'the full spectrum of the information domain [which] runs from hardware, through software to what has been called "wetware", the realm of knowledge in the human brain and mind'.²⁶

The use of the term 'cyberspace' is to some extent metaphorical, used in an attempt to describe spatially what otherwise might be a fairly nebulous concept. The physical 'battlespace' can be described and mapped using geographic coordinates, heights and through the description of physical features. In cyberspace, the physical location of hardware is only part of the information required; it is often more meaningful to describe the 'space' in terms of its logical network topology, with Internet Protocol addresses being more important

than geo-coordinates. The language of cyberspace is therefore the means of dealing with the complexity of the 'interdependent networks of information technology infrastructures and resident data'.²⁷ However, it is possible to take the spatial metaphor too far and therefore undermine its credibility. The US Air Force Mission 'fly, fight and win... in air, space and cyberspace' is a good example of this.²⁸ The idea applying the flying and fighting analogy to cyberspace has resulted in ridicule that undermines the argument for a Fifth Domain.²⁹ US airmen are clearly not physically able to 'fly' through cyberspace, but navigating through the network to deliver a 'payload' of software code to a target does seem a reasonable way of simplifying the complexity and 'selling' the mission to 'warfighters' rather than technocrats. The highly technical language of cyberspace that is underpinned by computer science is appropriate for cyber specialists. However, if cyberspace operations are to be truly integrated with the other domains, then the specialist language of cyberspace must be translated into a different specialist language, that of joint military operations. The Fifth Domain metaphor is arguably useful in helping achieve this.

A domain is 'a specified sphere of activity or knowledge'.³⁰ Therefore, perhaps one of the strongest arguments for designating cyber as a domain of warfare is a pragmatic one; military forces need to organise specialist areas to develop suitably qualified and experienced personnel and to enact effective command and control over those specialist units. Military cyberspace operations require different skills to the traditional physical domains. One hundred years ago, the emergence of the aeroplane over the battlefield gave rise to similar challenges, requiring people both on the ground and in the air who had different skills and who needed to think differently about the conduct of warfare. This led to the creation of separate air arms and eventually, independent Air Forces. An airman's perspective, both literally and figuratively, is very different from that of a soldier or sailor. Like the physical domains, the cyber domain requires operators with a unique perspective, one underpinned by a deep understanding of the nature of cyberspace. In discussing organisations dedicated to operating in the Fourth and Fifth Domains, Colin Gray argues that they are 'likely to advance understanding and capability, not least for joint effectiveness, more rapidly than an arrangement whereby space and cyber concerns are not the primary foci of loyalty and concern'.³¹

Within the US, the distinct nature of cyberspace compared to the other domains has been acknowledged through the establishment of a Cyber Command. There are already calls for the single-service units that make up Cyber Command to evolve into a separate branch of the military.³² Proponents of a separate branch argue that currently those employed in cyberspace are 'ideologically biased by their operational past—be it on land, at sea, or in the air' and that their single service origins cause 'unhealthy competition' and ultimately 'threaten unity of command'.³³ However, growing a separate service branch poses significant bureaucratic and budgetary challenges; for nations other than the US, scale alone may make the creation and sustainment of separate forces untenable. Another argument to counter the call for a separate cyber-service is the interdependence of cyberspace with the other domains. It may prove that

individuals with both cyber specialist skills and experience in one of the traditional warfighting domains will aid the integration of cyberspace into joint operations.

In defining the Fifth Domain it is equally important to eliminate what is *not* in the military domain. Those writing about 'Cyber War' have often conflated online crime with war. Dealing with crime quite rightly remains the business of law enforcement, not the military. Whilst 'cybercrime' is of concern to governments and needs to be addressed as part of overarching cyber security strategies, it is distinct from using cyberspace in military operations. Similarly, whilst cyber-derived intelligence may be part of military operations, it is distinct from state-sponsored espionage through cyberspace; one state spying on another through cyberspace does not in itself constitute an act of war, nor need it be part of warfare. Tibbs argues that it is now time for 'the more recent convergence of hyperbole and pragmatism', surrounding cyberspace in the business context to extend to the military context.³⁴ Ultimately, it is the decision of individual governments to determine the extent of the missions delegated to their military forces, underpinned by domestic and international law and their own policy decisions. Many caution against the militarization of the Internet and beyond its military utility and vulnerability, it remains somewhere for business, entertainment, education and numerous other non-warlike human activities. However, the interaction and interdependence between the uses of cyberspace arguably necessitate an overarching governance role within each state 'with topsight responsibility for cyber strategy'.³⁵

Singer & Friedman argue that cyberspace is not 'merely a physical place and thus defies measurement in any kind of physical dimension. But [it] isn't purely virtual'.³⁶ The hardware and software of cyberspace come into contact with both the physical and cognitive world and whilst not part of cyberspace, the interactions and interfaces with the physical and cognitive are important. The maritime domain includes the interface between the land and the sea - the littoral. The littoral acts as the demarcation point between land and sea and is the realm of specialist amphibious forces. Cyberspace also has a number of 'littorals' including: physical infrastructure, cabling and electrical power; the electromagnetic spectrum that data traverses; electro-mechanical processes under computer control; and the senses and cognition of computer users. The 'cyber littorals' may be either the vector through which a cyber-attack is delivered or the intended target of a cyberspace operation.³⁷ To include the 'cyber littorals' in the domain definition would make the definition so broad it would become meaningless; whilst a human operator interacts with cyberspace, he is not part of it. Despite this, Singer and Friedman do give a broader definition of cyberspace: 'cyberspace is the realm of computer networks (and the users behind them) in which information is stored, shared, and communicated online'.³⁸ If an effect through cyberspace aims to change the state of something in the physical world or in the realm of human cognition, understanding the interfaces with cyberspace is as important as understanding the software code within it.

Arguably, whether US doctrine writers are correct in labelling cyberspace as the Fifth Domain is not in itself particularly important. As Michael Howard contended:

'I am tempted indeed to declare dogmatically that whatever doctrine the armed forces are working on now, that they have got it wrong. I am also tempted to declare that it does not matter that they have got it wrong. What matters is their capacity to get it right quickly when the moment arrives'.³⁹

Howard argues that it is the role of military science 'to prevent the doctrines being too badly wrong' and therefore it is important to shape the understanding of cyberspace to ensure that its development is at least on an appropriate intellectual trajectory.⁴⁰ Whether or not the Fifth Domain doctrine proves correct and endures over time, it has been adopted much more broadly than the US DoD, most notably across NATO and European nations.⁴¹ However, whilst cyberspace has been accepted as a military domain, it also has significant utility across the other levers of power.⁴² Whilst cyberspace is to some extent a metaphor, the Fifth Domain nomenclature does start to aid understanding of the role of cyberspace as part of joint military operations. This paper therefore accepts the utility of the Fifth Domain in a semantic sense and now turns to consider its practical utility.

Cyber Defence and Cyber Dependence

A nation's relative strength in cyberspace is not only related to the efficacy of its offensive capabilities; it is also heavily influenced by its defensive cyber capabilities and its dependence on cyberspace. Admiral Mike McConnell makes a fairly evident observation regarding US reliance on technology which highlights an important aspect of the Fifth Domain:

'Because we are the most developed technologically – we have the most bandwidth running through our society and are more dependent on that bandwidth – we are the most vulnerable'.⁴³

Clarke and Knake rank the 'overall cyber war strength' of a number of nations by scoring them according to three factors: offense, defence and dependence.⁴⁴ Whilst their scoring mechanism is crude, it does illustrate that states with highly developed offensive cyber capabilities are not necessarily the best equipped to win in the Fifth Domain. An actor with a relatively low offensive capability may succeed against a more capable offensive actor if it is less dependent on cyberspace. Below the nation state level this is particularly true of military forces. Tibbs contends that 'the risk for the Pentagon, with its strong reputation as a "technology shop," is that an over-emphasis on technology could become an Achilles heel'.⁴⁵

Any actor considering the utility of integrating cyberspace within joint military operations must weigh options to attack through cyberspace against its ability to block or mitigate the effects of a cyber-response from an adversary. In recent conflicts, the US and its allies have enjoyed a significant advantage because military power has been employed against much weaker adversaries. In cyberspace, the technological advantage enjoyed by Western states may actually be a vulnerability and could potentially allow a technologically inferior adversary to gain asymmetric advantage. Highly advanced platforms and weapons systems are by their

nature highly dependent on cyberspace. Cyber dependence, 'the extent to which a nation is wired, reliant upon networks and systems that could be vulnerable', can only be mitigated with a commensurate focus on defence.⁴⁶

This reliance coupled with the fact that 'security on the Internet has never been anything but a vague intention' means that a broad range of vulnerabilities exist that could potentially be exploited by an adversary.⁴⁷ Cyber defence is underpinned by three core principles of information security: confidentiality, integrity and availability.⁴⁸ Effective cyber defence addresses all three principles based on the criticality of the information to the organisation. Appropriate defensive measures are put in place based on risk assessment. Where information is assessed as having particular sensitivity, it will be afforded greater protection to assure its confidentiality. Similarly, where the integrity or availability are 'mission critical', measures need to be taken to ensure that system availability cannot be degraded or data cannot be modified by an unauthorised source.

Cyber defence can broadly be divided up into active and passive measures. The passive measures are those associated with 'cyber hygiene', including managing the behaviour of system users, maintaining updates of software and hardware and the use of intrusion detection systems and firewalls.⁴⁹ These passive measures are well established and represent the day-to-day activity of protecting a network against an ever-changing threat landscape. More controversially, active defence includes pre-emptively attacking an aggressor, which could include using a cyber-attack to prevent or deter an imminent attack. Whilst the right to self-defence is enshrined in international law, it is unclear how this may apply in practice in cyberspace.⁵⁰ An attack in the Fifth Domain may not be apparent in advance; there may not be evidence of 'enemy forces massing on the border' that might occur in the physical domains. Hence, pre-emptive proof of a need to act in self-defence may be problematic until an attack has begun.

Farwell and Rohozinski argue that whilst 'Clausewitz believed that in warfare, the advantage rested with the defence. Cyber reverses that equation'.⁵¹ However, the likelihood of the Fifth Domain marking a return to a doctrine of '*Attaque à outrance*, or "Attack to excess"' seems unlikely.⁵² It may be tempting to be seduced by investing predominantly in offensive capabilities in the belief that the 'best defence is attack'. However, highly cyber-dependent states are particularly vulnerable if they do not protect themselves adequately. Singer and Friedman argue that in fact 'the best defense [*sic*] actually is a good defense... any steps that raise the capabilities of the defense make life harder on the offense and limit the incentives for attacks in the first place'.⁵³ If defensive measures remain effective, only the most capable and determined attacker would be able to breach them.

The reality for highly developed states that wish to carry out offensive acts in cyberspace is that retaliation may not come back directly at the military forces that instigated the attack. Whilst armed forces may choose to harden their systems against a cyber-response, 'the ongoing

cyber sabotage conflict between the United States and Iran demonstrates that Internet commerce provides a soft target for retaliation.⁵⁴

Ultimately the ability to attack and the requirement to defend in cyberspace comes largely as a result of errors; either errors in the software coding of the systems or of the users not using them in the manner intended.⁵⁵ Perfectly written and executed code, operated by perfectly behaved users is unlikely to contain exploitable vulnerabilities. However, code is generally written by humans who are error prone and software is increasingly becoming more complex, increasing the challenge of making it error free. In addition to attacks that exploit software vulnerabilities, some attacks, such as Distributed Denial of Service (DDoS) attacks overwhelm the hardware and software resources of the target system by flooding them with more traffic than they can handle.⁵⁶

The post-1991 US style of Network Centric Warfare is arguably the reason why the US is concerned about warfare in the Fifth Domain.⁵⁷ It is clear that the dependence of military forces on advanced technology and network connectivity brings a range of threats and opportunities. 'Fifth generation' weapons platforms may be particularly resilient against conventional threats, but threats in cyberspace may represent a chink in their armour. Countering threats to modern weapons platforms may require a much more holistic approach to cyber defence than simply protecting computer networks. The network-centric weapons platform is surrounded by numerous supporting systems that may represent an attack vector. These may include the component supply chain, engineering and logistics support systems, and power and environmental control systems. The increased reliance on 'on-board computers and network connections' presents the risk that 'equipment does not function as and when expected... [adding] enormously to the fog and friction of any incident.'⁵⁸ Vulnerabilities discovered in modern military equipment, such as the new US Littoral Combat Ship, highlight the need to ensure adequate cyber defence through design, development and whilst in operation.⁵⁹

However, the extent of concern over cyber dependence has led to questionable pronouncements by US government officials, such as US Defense Secretary Leon Panetta's warning of the possibility of 'Cyber Pearl Harbour'.⁶⁰ Whilst such frightening claims help the US DoD gain support for their mission to 'defend the US nation in cyberspace,' the comparison between the cyber threat and the Second World War attack on Pearl Harbour undermines the credibility of the debate and detracts from the reality of the threat. From the perspective of Fifth Domain, attacks on US infrastructure, whether or not related to actual conflict, become the realm of the US military. Most other western nations have thus far not delegated the responsibility of protecting their critical national infrastructure to military forces. A military cyberspace role outside of conflict raises the question of whether a cyber -attack might elicit an offensive cyber response or a conventional military one if attribution can be proved and it crosses a nation's response threshold. The delegation of responsibility for the task of defending the nation in cyberspace is a significant step in militarizing the Fifth Domain.

Military Theorists and the Fifth Domain

Colin Gray contends that 'one day there will be competent and robust specific general theories of space power and cyber power, but they do not exist as of yet'.⁶¹ Whilst we wait for a Clausewitz, Mahan or Douhet to write a theory appropriate for the Fifth Domain, there are elements of existing theory that have direct relevance to the use of cyberspace in war. Conversely there are dangers in applying false lessons from the theories of war on land, sea and in the air to cyberspace. Analogies have been drawn between the emergence of cyber power at the start of the 21st Century and the emergence of air power a century earlier. However, in the absence of a cyber-power theory Gray highlights the dangers of trying to 'fold space power and cyber power into air power theory and doctrine'.⁶² This paper makes no attempt to address the lack of cyber power theory but instead it draws on existing theory to determine its relevance to military operations in an increasingly cyber dependant age.

The basic principles of war retain their applicability in the Information Age. Despite changes to its character, its nature endures: war remains 'an act of force to compel the enemy to do our will'.⁶³ J.F.C. Fuller argued that in order to defeat an adversary, force must be applied to best effect against the three components of fighting power: the physical, mental and moral.⁶⁴ The aim is to apply sufficient force against these three components to achieve the ends. Hence the aim may not be the physical destruction of enemy fighting power, but adequate destruction, coupled with mental disorientation to cause sufficient weakening of the enemy's will to resist.⁶⁵ The ability of cyberspace to degrade the physical component may be limited, but there is clear utility in using cyberspace operations to affect the mental and moral components.

The birth of air power brought with it much promise of a new way to fight wars. Early theorist Giulio Douhet saw air power as a means of avoiding the bloody attrition of trench warfare seen during the First World War.⁶⁶ Douhet's theories centred on offensive action based on the use of 'bombardment units' that could strike deep into enemy territory.⁶⁷ The promise of air power was that it could replace the need for land battle. Hugh Trenchard similarly advocated the use of independent air power and stressed the psychological effects as well as the physical, arguing that 'the moral effect of bombing stands undoubtedly to the material effect in a proportion of 20 to 1'.⁶⁸ However, during the Second World War, air power failed to live up to the bold claims made by Douhet and Trenchard. Air power's contribution was significant, both as an independent instrument and when integrated with the land and maritime domain; however, it was not decisive in its own right. Air power neither caused the precisely-targeted destruction required to bring out victory in its own right, nor did it shatter the morale of the civilian populations who were subjected to its effects.

Similarities clearly exist between the early claims for air power and the notions of war in the Fifth Domain. In particular, the hyperbole evident in some of the early air power theorists is evident in some of the discussions regarding cyberspace. Cohen argues that 'Air power is an unusually seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment'.⁶⁹ The idea that future wars will be fought

in cyberspace is another example of the seductive nature of new technology, which is unlikely to live up to the hype. Cyberspace operations have some similarities with air power, most notably in their characteristics of speed and reach. Theoretically at least, cyber power, like air power can respond quickly to a crisis and deliver effects at range, without committing ground troops. Where cyber power and air power differ is in their ability to be violent. Beyond the potential for very limited material destruction cyberspace operations do not include violence or the threat of violence.

Douhet firmly held the belief that the best form of defence was offense and as a consequence he dismissed ideas of air defence, convinced that it could not meet its aim.⁷⁰ The current debate of cyberspace favouring the offensive is reminiscent of Douhet's claims. Stanley Baldwin's prediction that 'the bomber will always get through' was no more accurate than any ideas of malware always getting through.⁷¹ Effective cyber defence is as important as effective air defence. Douhet advocated attacking enemy airfields and aircraft industry, favouring 'destroying the eggs in their nest' rather than meeting the enemy in aerial combat.⁷² This concept of attacking at the point of greatest vulnerability clearly has validity in the Fifth Domain. Rather than attacking military networks whilst deployed on operations, it may be more appropriate to attack the component supply chain.

The 1991 Persian Gulf War was heralded as a Revolution in Military Affairs and marked a change in the American 'way of war'.⁷³ The manner in which air power was employed has been characterised as 'parallel warfare... based upon achieving specific effects, not absolute destruction of target lists.'⁷⁴ The concepts behind 'parallel warfare' are attributed to the US Air Force officer and air power theorist, John Warden. Warden's 'Five Strategic Rings' model was the basis for the 1991 Persian Gulf War air campaign, where instead of sequentially 'rolling back' enemy defences, emerging technologies of stealth and precision guided munitions enabled simultaneous access to the 'leadership... organic essentials, infrastructure, population and fielded forces.'⁷⁵ Whilst this approach brought about rapid victory, some of the targets destroyed by air power in Iraq in 1991 and again in 2003 left a legacy of civilian hardship that arguably later fuelled an insurgency. Short-term cyber disruption to infrastructure and organic essentials as an alternative to the long term destruction caused by air power may therefore be preferable in some cases. Warden advocated '... [thinking] of the enemy as a system composed of numerous subsystems' this he argued, would achieve success with the minimum effort.'⁷⁶ The application of Warden's 5 Rings Model and systems approach is arguably viable for the conduct of Fifth Domain operations. Cyberspace can give reach into the leadership ring and could potentially complement kinetic effects across the other strategic rings. However, closer examination is required to determine whether cyber effects are a viable alternative or indeed if they are even possible in practice. Leed argues that:

'Conceptually, offensive cyber operations offer a source of "fires" whose degree of lethality can be tailored to the situation at hand, be (at least in some instances) reversible, and may prove less costly than alternative methods of pursuing similar effects.'⁷⁷

However, applying ideas of parallel war in cyberspace is reliant upon the character of the war resembling the post-1991 American way of war. Recent history has shown that the state-on-state war may not represent the dominant form of warfare and 'popular theories of the 1990s [have] withered in the cultural realities of the wars that followed 11 September 2001'.⁷⁸

Arguments For and Against Fifth Domain Utility

The military utility of cyberspace is not simply a function of the ability to launch attacks against an adversary. Like the physical domains, military forces require 'freedom of manoeuvre' in cyberspace to ensure that operations can be conducted without an adversary being able to unduly constrain that freedom. This may require the ability to protect networks and platforms using active and passive means. Ensuring freedom of manoeuvre implies that military forces must try to exert some form of control over cyberspace but, unlike the physical domains, the nature of cyberspace means that exerting absolute geographic control is impracticable. Like the air domain, control in cyberspace may be limited in time and space, although the spatial component may relate to logical, rather than physical space.

Exerting some degree of control over cyberspace does not imply that it is possible or even desirable to exert control over the Internet. Whilst some have argued that the Internet is a 'global commons', that cannot or should not be owned or controlled, its physical manifestations are in fact divided up with the same approach to territorial ownership as the artificial lines on a map that define nation states.⁷⁹ Some states have configured their portions of the Internet in a manner that would make controlling or limiting access almost impossible, others have intentionally designed network infrastructure to facilitate authoritarian control over access to information. Whilst it is debatable whether exerting control over the public Internet during conflict is a practicable proposition, Libicki contends that 'the ability to command or at least to confound the Internet of foreign countries is likely to be of modest *military* value'.⁸⁰ In fact in some circumstances the desired outcome may be to ensure that free and open access to the Internet is maintained, not constrained.

Despite the hype around the risks of 'cyber-attack', it is arguably not a particularly effective means of applying military force in its own right. Tibbs argues that:

'Networked digital computers are enormously powerful tools for collaboration, but lack many fundamental properties required to apply hard power with coercive intent. Unlike aircraft, their direct application as a form of warfare is non-obvious. However, their capabilities are extraordinarily well suited to ... cyber espionage and cyber sabotage'.⁸¹

Whilst cyber effects are unlikely to be coercive in their own right, the use of 'cyber sabotage' is likely to increasingly be an important part of warfare, reflecting increasing cyber dependence. The use of 'wartime cyberattacks against military targets and military-related civilian targets' is described by Libicki as 'operational cyberwar'.⁸² Operational cyberwar is distinct from any ideas of 'Cyber War' *per se*. Discrete cyber war is problematic, largely due to its lack of potential

for violence, highlighted previously, but also for the difficulty in achieving demonstrable attribution. However, questions of attribution become irrelevant during a conflict in the physical domains, 'it is usually a straightforward matter to determine the nation responsible, since the conflict takes place during an ongoing geo-political crisis'.⁸³ Cyber effects during a conflict are not independent acts, but are integrated to a greater or lesser degree with the ongoing physical conflict. Betz and Stevens argue that 'while military cyber power is likely to be efficacious, it will not be so in itself'.⁸⁴

In order to assess how cyber operations might usefully be employed, the characteristics of a cyber-attack need to be established, most notably the use of software code as a weapon. Accepting that thus far 'not a single human being has been killed or hurt as a result of a code-triggered cyber attack', the nature of a 'cyber weapon' is clearly different to a conventional kinetic weapon.⁸⁵ Kinetic weapons are designed to cause physical damage to humans or property. Whilst kinetic weapon choice can limit scale and severity in order to vary the effect to be delivered, it must result in inflicting some degree of violence on its target. As a consequence, to some extent the effects of the weapon will endure after its use; wounds need time to heal, buildings must be rebuilt and infrastructure must be repaired. In many cases it may be desirable to degrade an enemy's military capability by putting it permanently beyond use. Cyber effects however, are often reversible so where the intention is to permanently deprive an enemy of a military capability, cyber operations may be inappropriate.

Conversely, the non-enduring nature of a cyber-attack may be advantageous. Wars are costly both in terms of human life and in the economic costs of recovery. Where a state's infrastructure is destroyed, it must be rebuilt post-conflict, with a moral responsibility often falling on the victor to support the recovery. This makes reversible cyberspace operations a tempting choice. Leed argues that:

'...if a cyber weapon could be used instead of a kinetic weapon to cause a temporary and reversible effect as opposed to a permanent one (e.g., raise a bridge instead of blow it up, or temporarily turn off the lights in a local area instead of destroying a local grid), the [US] could theoretically avoid the costs of rebuilding or repairing infrastructure.'⁸⁶

Whilst achieving a reversible cyber effect may not be a trivial undertaking, it may become not only desirable, but necessary, particularly when the target is something that has a dual military and civilian use. Based on the norms of International Law, if a belligerent has the capability to achieve military advantage with a less destructive means, the principle of proportionality may even *require* its use.⁸⁷ Moreover, if victory is dependent on gaining and maintaining the support of an indigenous population, levels of destruction that cause suffering and undermine their way of life are unlikely to ensure their support or acquiescence.

Arguably, increasingly effective cyber defence overcomes all but the most capable and determined offensive cyber actor. Whilst a military force may put significant effort into

developing a 'cyber weapon', the 'weaponised code' can quickly become obsolete. Unlike conventional kinetic weapons which often have broad use in a number of different attack scenarios, cyber weapons are generally aimed at exploiting a specific type of vulnerability in a specific configuration. An offensive cyber actor might develop an attack capability, but he is not just fighting against the defensive capabilities of his enemy. In many cases the software target is likely to be a commercially available product and therefore the offensive actor is also fighting against the greatest minds of the software and IT security industry, or potentially the Open Source software movement, who continually aim to identify and remove vulnerabilities in software.

The ability of states and the global IT security industry to react to and mitigate a cyber-attack leads to the argument that a cyber-weapon 'is essentially a "one-shot" capability, [opponents] will patch the target system to prevent further attacks against the same node.'⁸⁸ In theory, a well-defended system would need to be attacked by a previously unused software exploit - the so-called 'zero-day' exploit. Once used, its effects become apparent and a patch is developed to counter the exploit. However, in practice networks may not be well defended, allowing attackers to use relatively unsophisticated methods and the evidence suggests that this is often the case: 'Verizon found... the incidents they investigated... did not involve highly sophisticated methods; 96 percent of the intrusions could have been prevented with simple or intermediate controls.'⁸⁹

Types of cyber-weapon can be placed on a spectrum from low impact weapons that can be employed generically to those that deliver a high impact against a very specific target.⁹⁰ As for the physical domains, cyberspace weapon choice should be tailored according to the desired effect, including the desired severity and permanence. In the context of an ongoing conflict, cyber-attacks may 'aim to deny, disrupt, or degrade enemy capabilities, either directly or indirectly (e.g., through deception)'.⁹¹ Rosenfield contends that 'the disruptive potential of cyber war is far more significant than its destructive potential'.⁹² Short term cyber disruption can be quickly reversed, but if synchronised with other operations, it has the potential to be extremely effective. Farwell and Rohozinski argue that:

'It also offers the potential to build the fog of war through the ability to effect disruption, deception, confusion and surprise. We are only beginning to envisage the potential for different forms of malware, or the strategies or tactics employed to use it.'⁹³

The 1991 Gulf War Air Campaign offers a historical case study for the potential benefits of cyber operations complementing kinetic weapons. Operation Desert Storm included air strikes to disable the electrical power grid. Despite some claims that attacks on the Iraqi power grid resulted in very limited civilian casualties, 'other critics believe that the loss of electrical power "contributed to" 70-90,000 postwar civilian deaths above normal mortality rates between Apr-Dec 1991 due to the lack of water purification and sewage treatment'.⁹⁴ The reversibility of cyber effects compared to the damage incurred by a kinetic effect arguably represents

the major advantage of Fifth Domain warfare, extending the range of effects available to a commander throughout all phases of an operation.⁹⁵

Exploiting vulnerabilities in the software of the target becomes increasingly difficult in a well-defended system, but the system remains vulnerable through its users. In IT security, exploiting the users of a system can result in attacks that are particularly difficult to defend against.⁹⁶ Attempts at protecting IT systems have often focussed on technical solutions, access controls, antivirus software, firewalls and other security products.⁹⁷ However, it is more difficult to detect and prevent attacks that are prosecuted through exploiting the human weaknesses of legitimate users of a system. Social engineering techniques are based upon exploiting human psychology, abusing basic human traits including the desire to be helpful, a tendency to trust people and the fear of getting into trouble.⁹⁸

Two of the ostensible advantages of attacking through cyberspace are the speed and reach of delivery; cyber effects can travel at 'net speed' and do not suffer from the same constraints of physical distance and speed that apply to a warship or even a jet aircraft. However, despite the ability to deliver a software payload to the target at speed, the desired effect may require a response from the operator of the system to respond and Libicki contends that 'human beings, unlike computers, do not work in nanoseconds. Persuasion and dissuasion in cyberwar take as much time as in wars of any other form.'⁹⁹

UK Air & Space Doctrine argues for a role for 'Air-Cyber integration' in attacking adversary cyber capabilities to enable air operations.¹⁰⁰ It gives the example of attacking computer networks to degrade an adversary's Integrated Air Defence System (IADS).¹⁰¹ Whilst attacking the enemy IADS may be desirable, it arguably presents a particularly challenging cyber target. The objective would be to disrupt or degrade the IADS at the critical time when a conventional air attack is being prosecuted. There has been one well known example of this when the Israeli Air Force attacked the Syrian nuclear reactor at Dayr ez Zwor in September 2007.¹⁰² During the attack, Israeli aircraft were allegedly able to 'effectively [turn] off the Syrian air defenses [*sic*] for the night' using a cyber-attack.¹⁰³ It is claimed that the Israelis were able to do so by inserting data into the IADS; however it is not clear exactly how this was achieved and it highlights speculation regarding the extent to which other nations, such as the US may have similar capabilities.¹⁰⁴ For the utility of the Fifth Domain this cyber-attack, whilst not destructive in its own right was crucial 'as part of an integrated military operation'.¹⁰⁵

Whilst this attack may offer a tantalising prospect for the use of the Fifth Domain, a note of caution is required. IADS are complex systems and arguably there are no generic cyber weapons to counter them. An attack would require a deep understanding of the system and a means of accessing what is almost certainly not connected to the Internet. However, Warden's systems approach is instructive in targeting such a system. The system includes the weapons, sensors, communication links and Command and Control (computer systems and decision making nodes). Understanding and exploiting the vulnerabilities via cyber-means does not

necessarily require disruption of the sensors or weapons systems that make up the heart of the system. The opportunities that may exist for exploitation may not be the disruption or destruction of computer systems, but may instead be cognitive through sowing doubt or confusion in the mind of the decision maker.

This returns to a key aspect of the Fifth Domain - the understanding of the cyber-littorals. Understanding the manner in which humans behave and interact with technology is of key importance in developing cyberspace operations. Arguably Fifth Domain warfare is as much a human sciences endeavour as it is computer science. As for war in the other domains there remains a need to understand the adversary. Despite an increasing reliance upon automated systems, the adversary is generally not the computer; it is the human who uses these systems. In the event of a system failure, reversionary modes of operation are often well practiced. Isolating a surface-to-air missile battery from its primary communications links might reduce its effectiveness, but the training and ingenuity of its operators are likely to ensure that reversionary modes of operation lessen the impact. Understanding enemy doctrine, tactics, techniques and procedures remains just as important in the Fifth Domain as it has always been in traditional warfighting.

Another challenge for the use of the Fifth Domain is in achieving an appropriate degree of assurance for a cyber-weapon. Kinetic weapons generally leave observable evidence to indicate their effectiveness and this evidence can, over time lead to a reasonable expectation that a particular weapon is likely to have a particular effect on its target. However, cyber weapons leave no visible 'bomb crater' to measure their effectiveness and the smallest change in the software system of the target could render the weapon ineffective. A modern kinetic weapon's effects are broadly predictable and repeatable; a cyber-weapon may not be. Moreover, assurance includes the ability to predict the unintended effects of a cyber-weapon, including its potential to spread to affect systems other than its intended target. Achieving an acceptable degree of assurance may rely upon the use of simulation and target modelling, which is dependent upon an accurate understanding of the configuration of the target system. Without a well-founded means of giving a commander adequate assurance, it is unlikely that he would chose an unpredictable cyber option over a tried-and-tested kinetic one.

Perhaps the greatest potential for cyberspace operations to produce effects in the physical domains, other than through cognitive effects, is through attacks on Supervisory Control and Data Acquisition (SCADA) systems, or Industrial Control Systems (ICS). These systems control numerous physical processes including manufacturing and critical infrastructure, such as electrical power, water and sanitation. ICS have been the focus of much of the hype regarding cyber-attacks, largely due to increasing concerns that they are 'designed with minimal security protection'.¹⁰⁶ ICS attacks have received particular scrutiny as a result of the Stuxnet attack on the Iranian nuclear enrichment facility in Natanz. However, far from setting a precedent for future attacks, Stuxnet has probably driven improvements to the security of control systems.

It also highlights the difficulties of constructing a 'cyber weapon' that can cause damage to a specific physical process. Whilst Stuxnet caused physical damage to a component of the system it was designed to attack, it required a significant intelligence effort both to understand the target system in enough detail to produce the weaponised code and to deliver it to the target.¹⁰⁷ The time and weight of effort required to deliver a cyber-effect may ultimately mean that in some circumstances a kinetic alternative is the cheaper, easier and timelier option.

For many states, the manner in which they plan to utilise the Fifth Domain for military operations remains shrouded in secrecy. Much of the publicly available information comes from the USA, perhaps because the US sees advantage in the general deterrence value of declaring offensive cyber capabilities. Healey cites General James Cartwright, who argues 'we've got to talk about our offensive capabilities and train for them; to make them credible'.¹⁰⁸ The US has published numerous official publications detailing its intention to utilise the Fifth Domain as an integrated part of warfighting, from high-level political intent down to tactical military doctrine.¹⁰⁹ However, other nations are clearly developing similar capabilities and Russia's doctrine reflects broadly similar military doctrine for the Fifth Domain: 'Russia sees information warfare capabilities as including computer network operations, electronic warfare, psychological operations, deception campaigns (maskirovka), and the deployment of malware, back doors and logic bombs'.¹¹⁰ The UK government has expressed its intent 'to develop new tactics, techniques and plans to deliver military effects' and to '[mainstream] cyber in military operations'.¹¹¹

The novelty of Fifth Domain operations has caused legal experts to debate the implications of their use in conflict. The NATO Cooperative Cyber Defence Centre of Excellence has issued 'The Tallinn Manual on the International Law Applicable to Cyber Warfare'.¹¹² This manual is the result of the collaboration of international legal and cyber security experts, with the aim of establishing the norms of behaviour in cyberspace, based on extant international law. Crucially, rather than calling for specific laws for dealing with the Fifth Domain, it argues that the Law of Armed Conflict applies to cyber operations in the same manner as other operations within an international or non-international armed conflict.¹¹³ This means that cyberspace belligerents must apply the same principles of necessity, proportionality, distinction and humanity that apply in all forms of conflict.

The Tallinn Manual is less clear on the circumstances where an attack in cyberspace would constitute a 'use of force' that would permit an armed response.¹¹⁴ The discord between nations on the 'use of force' is reflected in the differing missions delegated to military forces. For example US Cyber Command, beyond protecting military networks and supporting the regional Combatant Commanders, is delegated specific responsibility to 'defend the nation in cyberspace'.¹¹⁵ This mission probably represents the most problematic use of the Fifth Domain. Unlike the use of cyber effects during conventional combat, defending broader national interest against cyberspace attack requires attribution to be determined in forensic detail and risks escalating non-violent attack into an armed conflict.

Conclusion

This paper has addressed the utility of the Fifth Domain in both a semantic sense and in terms of the practical utility of military operations in cyberspace. The debate around cyberspace is replete with ambiguous terminology and the common usage of the term 'cyber' lacks the precision required for it to be meaningfully applied to military operations. A number of nations have developed doctrine for cyberspace operations, but the US has led the debate in favour of declaring cyberspace as a warfighting domain. This paper has accepted the US DoD definition of cyberspace as broadly appropriate and meaningful in establishing the case for a Fifth Domain of operations.

Various national debates regarding cyber security have led to armed forces in a number of countries staking their claim to new financial resource and for the additional responsibility of cyberspace missions. Cyberspace has both physical and virtual manifestations and it interfaces with all the other domains, rather than being part of one physical domain in particular. These facts strengthen the case for independent domain status. It is necessary to develop personnel with an innate knowledge of cyberspace - just as an airman intuitively understands the principles that underpin operating and fighting military aircraft, cyber operators need an intuitive understanding of their domain.

Despite significant alarmism regarding the threat of cyber-attack, Fifth Domain operations are not solely the preserve of offensive cyber actors. The dependence on cyberspace of technologically-advanced Western states requires that commensurate effort is put into cyber defence. This is particularly true for military forces that gain their military advantage through advanced weapon systems. Armed forces that rely upon their technology without appropriately protecting it from cyber threats, offer their opponents an opportunity to gain asymmetric advantage.

A wealth of literature has appeared arguing for and against cyber power utility, although it lacks the firm theoretical foundations that have been developed in the other warfighting domains. However, there are elements of existing theory which have relevance in the Fifth Domain and the development of cyber-power concepts echoes those of the other domains, particularly the early days of air power. Fallacious arguments of air power being able to remove the requirement for land battle are reflected in similar claims for cyberwar. Cyberspace changes the character of war, but as with all technological change, the basic nature of warfare endures. Many of the extant theories of war retain their validity even when cyberspace effects are integrated into a campaign.

Military operations in the Fifth Domain cannot replace those on land, sea and in the air but they can complement and enhance them. Cyberspace effects in their own right are poor military instruments, they lack the potential to be violent and therefore cannot necessarily be coercive in the same manner that a ground invasion, bombing campaign or port blockade can be. The real potential of the Fifth Domain lies in carefully synchronising cyber operations with

operations in the physical domains to cause disruption, and support deception and confusion. Cyber effects can cause short term, reversible disruption to technology that has the potential to give advantage to an attacker in a way not possible with kinetic effects. Cyberspace has the ability to make elements of warfare potentially less violent, but can only do so if backed up by the potential for violence from the other domains. Beyond reversible disruption, cyberspace offers the potential to sow the seeds of doubt in the mind of an enemy operator or decision maker. It can do so by presenting him with conflicting, ambiguous or incorrect information that plays upon cognitive, rather than physical vulnerabilities.

The particular missions for cyber forces will evolve over time, based upon national and international legal and policy constraints, but equally as a result of practical experience of the effectiveness of choosing cyberspace from the range of military levers. Some of the proposed missions for cyber weapons, such as defeating IADS or ICS, present a tantalising prospect for military commanders. However, it may prove that these 'hard' targets do not represent the norm of future cyber operations. Cyberspace effects may end up being more efficacious when employed against more generic target sets, rather than highly complex bespoke systems.

Arguably a key measure of success for cyberspace as the Fifth Domain of warfare is when it is effectively 'mainstreamed'. When the novelty of cyberspace wears off, discussions of 'cyberwar' will naturally fade away. Cyberspace operations will eventually 'normalise' and the Domain will become an integral part of joint warfare. Whilst there are many aspects to cyberspace in the world of business, entertainment, communication and knowledge sharing, there is a clear military role. The Fifth Domain of warfare has significant utility for 21st Century conflict and the classification of cyberspace as a domain is both entirely appropriate and necessary as a reflection of the reality of technology.

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Viewpoint

UK Aerospace Power in Future Force 2020

By Professor Philip Sabin

Introduction

At the end of 2014, I was asked to appear before the House of Commons Defence Select Committee to help with its enquiry into the current status of Future Force 2020 (the framework underpinning the UK's future force structure, as set out in the 2010 Strategic Defence and Security Review (SDSR)).¹ Having written articles recently in the *RUSI Journal*, the *JAPCC Journal* and *Air Power Review* itself about UK air power and about the strategic challenges facing western aerospace power more generally,² I agreed to brush up on the latest issues and to testify before the Committee. I also submitted a short paper of written evidence summarising the key considerations as I saw them, which here, I have developed into another Viewpoint for *Air Power Review*, in the run-up to the 2015 election and the ensuing SDSR process.³ This contribution does not pretend to contain innovative in-depth analysis, but it may offer a useful *tour d'horizon* based on my long experience with aerospace matters.

Twenty-seven years ago, I edited a full length book on *The Future of UK Air Power*.⁴ It is instructive to look back on that work to see the enormous gulf between the inertia of major procurement projects and the unpredictability of strategic requirements. Contributors were already preoccupied even then with the Typhoon (European Fighter Aircraft) programme and with ambitions for a new generation of larger aircraft carriers, but thoughts on the 21st Century strategic context extended little beyond an indefinite prolongation of the drawn out Cold War confrontation between NATO and the Warsaw Pact. If a time traveller had told us that Typhoon and the carriers would actually come into service in a world where NATO rather than the USSR was withdrawing from a prolonged and frustrating counter-insurgency campaign

in Afghanistan, and where the Typhoons would be defending a former province of the USSR itself (the Baltic States), he would have been dismissed as a madman! Even over much shorter timescales, the twists of world events are incredibly hard to predict. In mid-2013, when all the talk was of threatened air attacks against the Syrian and Iranian regimes, who would have thought that a year later we would instead end up launching an extended bombing campaign against some of the Sunni opponents of those regimes?

It is the thankless task of government and the Armed Services to plan defence capabilities years and decades in advance, despite such gaping uncertainties over the tasks which those forces will actually be called upon to undertake. Future Force 2020 is the latest incarnation of those plans, and the 2015 SDSR will try to adapt to such changed circumstances as have become apparent since the plan was first promulgated in the 2010 SDSR. I see three enduring factors which will shape this response. These factors are to some extent in tension with one another, and it is the resolution of those tensions and the difficult decisions on relative priorities which will help determine how effectively the UK addresses its security needs in the unpredictable world of the 2020s and beyond. I will now discuss each of the three factors in turn.

1) *The Prominence of Aerospace Capability*

Despite all of the unforeseen strategic twists and turns of the past few decades, aerospace capabilities have become an increasingly central pillar of the UK and wider Western response. Aerospace capability was already playing a growing role within the 'Air-Land Battle' concepts of the late Cold War, and the 1991 Gulf War showed the degree of aerospace dominance within high intensity conventional warfare. Modern aerospace power has the crucial benefits that it exploits the Western technological edge, minimises the risk of friendly casualties, and can be focused rapidly at distant points anywhere around the world. Hence, there have been numerous campaigns such as Kosovo in 1999, Afghanistan in 2001, Libya in 2011 and Iraq and Syria today, in which aerospace power has been by far the most important instrument of UK and Western strategy.⁵ It has also been the main element of the UK response in other cases such as the recent crises in Mali and Nigeria and the deterrent support of the Falklands and the Baltic States.

Aerospace power is by no means omnipotent, and many have suggested that it takes 'boots on the ground' to achieve a lasting impact, especially in politically tangled counter-insurgency campaigns.⁶ The Future Force 2020 plan reflects this perspective by discussing brigade-level operations 'with maritime and air support as required'.⁷ However, bitter experience in Iraq and Afghanistan over the past decade (as well as Israeli experience in Lebanon and Gaza) shows that ground forces are not necessarily capable of achieving better long term strategic effects than aerospace forces. More importantly, even those campaigns in which land and maritime forces have played a key role would not have been undertaken at all without aerospace forces as an integral and equally important element of the joint campaign. The contribution of aerospace capabilities in terms of intelligence, communications, transport and firepower is so great in modern operations that Western forces no longer fight solely 'ground' or 'naval' wars. Without effective aerospace capabilities, hardly any military options would be available to the UK at all.

2) *Balanced and Capable Forces*

As a former imperial superpower, the UK historically has tried to maintain a full range of national defence capabilities. There have been many suggestions over the decades that Britain should accommodate itself to its diminished status, and adopt a more focused and efficient defence effort through 'role specialisation', concentrating on some capabilities and tasks while leaving others to allies and partners.⁸ However, as the Cold War confrontation gave way to more varied challenges such as the Falklands War and the many recent conflicts in the Balkans, Africa and the Middle East, the UK has resisted such role specialisation pressures, especially since it seemed risky to rely too much on any individual partner (even the USA) in the less politically predictable international environment. The result is that the UK (like France but unlike states such as Germany and Turkey) has retained the varied military trappings of a 'mini superpower'. Abandoning certain capabilities altogether has proved difficult and controversial for Britain, as with the aircraft carrier debate which has raged on and off since the 1960s,⁹ and as with the recent disinvestment in maritime patrol aircraft (which has been criticised partly because it threatens the security of that supreme exemplar of the UK's superpower pretensions, the nuclear deterrent force).¹⁰

Another key consequence of the end of the Cold War has been that the UK's conventional defence capabilities are now intended much more for actual use than for deterrent posturing. There is a tendency for forces which are not routinely engaged to be 'hollowed out' through under-investment, as had happened to Britain's own forces by 1990, and as a recent leaked parliamentary report claims is still the case with much of Germany's military hardware.¹¹ Today's UK forces, by contrast, are employed repeatedly on active operations, and as a consequence their capabilities are honed by experience and practical investment. A particular focus in the aerospace domain has been on surveillance and precision engagement capabilities, to comply with the overriding importance in current operations of identifying elusive opponents and engaging them quickly and accurately without politically catastrophic collateral damage. Capabilities such as Sentinel, Rivet Joint, Sentry, Reaper, Raptor, Litening, Paveway and Brimstone have been critical in addressing this need and transforming UK air power from an attritional instrument of Cold War deterrence into a precision ISTAR and attack tool. Britain also maintains significant air transport and aerial refuelling assets which allow the deployment and support of its air power in distant expeditionary operations. The main capability shortfall exposed by the recent focus on extended operations in relatively unchallenging air defence environments is in the training and technology needed to supplement stand-off weapons such as cruise missiles and Storm Shadow and to allow UK air platforms to penetrate more capable air defence zones without undue risk.¹²

3) *Financial Constraints*

A constant preoccupation throughout the successive UK defence reviews since 1945 has been the need to accommodate increasingly severe budgetary constraints. Given the pressure to maintain a varied range of high quality defence capabilities, the main impact of these financial pressures has been the inexorable shrinkage of force numbers. The table below compares the

number of front line UK aircraft squadrons (across all three services) at the end of the Cold War to the number today.¹³ The most striking contraction is in the fast jet force, which fell from 30 squadrons in 1990 to only 7 today. According to the latest IISS *Military Balance*, this compares to current strengths of 15 front line fast jet squadrons for France, 15 squadrons for Turkey, 11 squadrons for Italy, and 9 squadrons for Germany.¹⁴ Although these comparisons significantly understate the UK's actual relative capability, it is undeniable that lack of mass has become a key weakness of Britain's otherwise impressive aerospace power.¹⁵ In the words of the 2012 *Future Air and Space Operating Concept (FASOC)*, 'We will have to innovate to compensate for our lack of combat mass. Although a range of potential measures are available, ultimately it is unlikely that all the shortfall can be addressed, so mitigation will be necessary'.¹⁶

1990		2014	
Tornado GR1:	10 squadrons	Tornado GR4:	3 squadrons
Buccaneer:	2 squadrons		
Harrier:	3 squadrons		
Jaguar:	3 squadrons		
		Apache:	3 squadrons
Tornado F3:	5 squadrons	Typhoon:	4 squadrons
Phantom:	4 squadrons		
Sea Harrier:	3 squadrons		
Nimrod:	5 squadrons		
Shackleton:	1 squadron	Sentry:	1 squadron
		Sentinel:	1 squadron
		Shadow:	1 squadron
		Rivet Joint:	1 squadron
		Reaper:	2 squadrons
Sea King:	10 squadrons	Sea King:	5 squadrons
		Merlin:	5 squadrons
VC10:	2 squadrons	Voyager:	1 squadron
Victor:	1 squadron	Globemaster:	1 squadron
Tristar:	1 squadron	Tristar:	1 squadron
		Atlas:	1 squadron
Hercules:	4 squadrons	Hercules:	3 squadrons
Chinook:	2 squadrons	Chinook:	3 squadrons
Puma:	2 squadrons	Puma:	2 squadrons

Just as important as the diminishing numbers of aircraft is the continuing fall in personnel strength. It takes a 2:1 or even 3:1 ratio of aircrew to deployed aircraft to maximise their operational utility, and skilled ground crews are another scarce and limiting resource. With all three of the remaining Tornado squadrons at one stage deployed concurrently on active operations over Nigeria, Iraq and Afghanistan, it is not hard to imagine the unsustainable strain on the personnel involved, and the disruption to normal patterns of rotation and training. Retasking of skilled personnel from less vital roles can provide a 'surge' capability in emergencies, but the more enduring and drawn-out the operations, the more that sustainability needs to be built into the active force structure itself. 'Unmanned' systems do not offer much relief from this personnel constraint, since they still need the same overhead of ground crew and in-flight operators, and they are even more reliant on a costly infrastructure of networked communications.¹⁷

Choices

It is hard to gauge how the 2015 SDSR will adjust the balance among these three enduring factors shaping UK aerospace forces. On the one hand, the revival of tensions with Russia and the new mission of defeating ISIS may trigger re-investment in defence, and in aerospace power in particular. On the other hand, the continuing challenge of reducing the budget deficit will keep defence spending under severe pressure, especially given the priority given to NHS spending and the political toxicity of tax increases in a still fragile economic situation. Much will depend on how international events and the economic climate evolve over the next few months, and on the effectiveness of lobbying by the competing interest groups. The period from 2016-22 is currently planned to see a shift in equipment investment priority from air systems towards land systems, submarines and the nuclear deterrent, so calls for increased funding of aerospace forces are likely to fuel inter-service tensions like those experienced during the 2010 SDSR.

With new platforms such as Typhoon, Lightning, Voyager, Atlas and Wildcat, the planned UK aircraft fleet is actually more modern than that of some other Western nations (including the USA). Transition of capability from the ageing Tornado force to the newly multi-role Typhoon force and on to Lightning does raise some challenges of training and systems integration. Given the likelihood that operations against ISIS will continue for the foreseeable future, there may be calls for further delays to the pace of Tornado retirement while the other platforms come on stream. The unfortunate and costly flip-flop on shifting to catapult-launched Lightning C variants leaves the UK with some difficult consequential choices.¹⁸ The Prime Minister announced at the NATO Summit in Wales in September 2014 that the second new aircraft carrier would be brought into service after all, but should SDSR 2015 follow through on this so as to enhance Britain's 'belt and braces' access to land and carrier bases, or is it more important to maintain or increase the number of aircraft themselves beyond the current plan for just 48 Lightnings? Should the UK remain committed to the B model throughout its Lightning fleet, or is there a case for acquiring some more capable A models which would be limited to land bases? At what point should spending on further manned platforms be

reconsidered in favour of investing in the various advanced unmanned alternatives currently under development? How feasible is it for such unmanned craft to operate off the new aircraft carriers, thereby helping to mitigate the current difficulties in affording both the carriers themselves and the aircraft needed to employ them to maximum effect?¹⁹

The balance between expenditure on combat platforms and on key enablers such as advanced munitions, tankers, transports, ISTAR capability, deployability and maintainability is a further key decision area for the UK. It is through its strengths in such enablers and support areas that Britain has been able to maintain more effective and potent air power than other Western nations with apparently larger combat air fleets. An important 'quality vs quantity' choice concerns how far to re-invest in penetrating and defeating increasingly potent air defences, and how far to focus instead on more efficiently finding and tackling elusive insurgent forces such as ISIS. Space and cyber warfare capabilities are further areas where difficult resource choices must be made within the limited funding available, and the current gap in maritime surveillance needs to be reviewed within the context of a holistic approach to future surveillance capabilities as a whole. Above all, the UK must decide how to retain and take best advantage of the skilled military and civilian personnel on which its aerospace power fundamentally depends. There are plenty of nations around the world which are less constrained financially than the UK in their acquisition of aerospace technology, but which fall short with regard to the capable, committed and resourceful human element which money cannot buy. Investing in its precious asymmetric advantage of defence personnel is a key priority which the UK neglects at its peril.

Notes

¹ *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*, Cm 7948 (London: The Stationery Office, 2010); <http://www.parliament.uk/business/committees/committees-a-z/commons-select/defence-committee/inquiries/parliament-2010/future-force-2020/>

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³ House of Commons Defence Committee, *Towards the next Defence and Security Review*, HC 197 (London: The Stationery Office, 2014).

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⁵ John Olsen (ed.), *A History of Air Warfare* (Nebraska: Potomac Books, 2009).

⁶ Martin van Creveld, *The Age of Airpower* (New York: Public Affairs, 2011).

⁷ *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*, Cm 7948 (London: The Stationery Office, 2010), para 2.15.

⁸ Philip Sabin & Michael Clarke (eds), *British Defence Choices for the Twenty-First Century* (London: Brassey's, 1993).

⁹ Christopher Parry, 'The United Kingdom's Future Carriers: what are they good for?', *RUSI*

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¹⁰ House of Commons Defence Committee, *Future Maritime Surveillance*, HC 110 (London: The Stationery Office, 2012); House of Commons Defence Committee, *Deterrence in the Twenty-First Century*, HC 1066 (London: The Stationery Office, 2014).

¹¹ Anthony Faiola, 'The German military faces a major challenge from disrepair', *Washington Post*, October 1st 2014.

¹² Dave Sloggett, *The RAF's Air War in Libya* (Barnsley: Pen & Sword, 2012).

¹³ *Statement on the Defence Estimates, 1990*, Cm 1022-I (London: HMSO, 1990), Annexes A-C.

¹⁴ International Institute for Strategic Studies, *The Military Balance, 2014* (London: Routledge, 2014).

¹⁵ John Olsen (ed.), *European Air Power: Challenges and Opportunities* (Nebraska: Potomac Books, 2014).

¹⁶ Development, Concepts and Doctrine Centre, *Future Air and Space Operating Concept*, Joint Concept Note 3/12 (Shrivenham: Ministry of Defence, 2012), p.3-29

¹⁷ House of Commons Defence Committee, *Remote Control: Remotely Piloted Air Systems - current and future UK use*, HC 772 (London: The Stationery Office, 2014).

¹⁸ National Audit Office, *Carrier Strike: the 2012 reversion decision*, HC 63 (London: The Stationery Office, 2013).

¹⁹ Ian Shields & James Spencer, 'An Unmanned Future for Naval Aviation', *RUSI Journal*, 156/6, December 2011, pp.48-54.

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