

GLOBAL STRATEGY FORUM



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**BEATING THE 21ST CENTURY:
ESSAYS ON CHANGING DEFENCE
& SECURITY IN A HARDER WORLD**

General Sir Richard Barrons KCB CBE

With a foreword by

Professor Michael Clarke

ABOUT GLOBAL STRATEGY FORUM

GLOBAL STRATEGY FORUM was founded by Lord Lothian (then the Rt Hon Michael Ancram MP) and Johan Eliasch in 2006 to generate open debate and discussion on key foreign affairs, defence and international security issues. As an independent, non-party political, non-ideological organisation, GSF provides a platform to explore some of the more challenging and contentious aspects of UK foreign policy and to stimulate imaginative ideas and innovative thinking in a rapidly changing global landscape. GSF is supported by an active and committed Advisory Board of MPs, Peers and experienced foreign and defence policy practitioners.

In accordance with our founding remit, we aim to bring together those with a strong interest in international affairs and to offer them the opportunity to exchange opinions and ideas, and to engage in informed debate. Through our publications and our website, we enable their expertise to be disseminated widely.

GSF's core activity consists of a regular lunchtime lecture and debate series on topical issues. For more in-depth discussion of specific topics, we host seminars and one-day conferences. We also hold small roundtable lunches and dinners on key issues of the day. Separately, as well as our annual compendium of lectures and the publication of the proceedings of our seminars, we publish an occasional series of monographs and also collections of essays and articles by distinguished experts.

Further details of all our activities, our events and our publications can be found on our website, **www.globalstrategyforum.org**, where it is also possible to register for our mailing list and to find out how to become a supporter of GSF. We can also be found on Twitter at **@strategy_forum** and on the Global Strategy Forum YouTube channel.

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NOTES

FOREWORD

Global Strategy Forum has always worked hard to straddle traditional security challenges – like classic suits they never really go out of fashion – alongside the trends in new and disruptive technologies and radical thinking that makes us feel uncomfortable wearing classic suits. During the lockdown months of 2020 there was plenty of time to think about the directions of ‘classic’ and ‘new’ security challenges and the relationship between them.

One of GSF’s Advisory Board members, General Sir Richard Barrons, has thought a lot more than most about these issues. Between May and September 2020 he wrote regular briefings for GSF on a wide range of topics and his essays attracted a great deal of attention and further commentary during that year and beyond. For that reason, GSF has collated these fourteen briefings into this single short volume so that they can be viewed as a developing narrative – in effect, a cumulative challenge – to so many of the conventional lines of thinking that underpins our existing security thinking.

He points out in passing that the vast majority of people in Britain form their views about war and peace, and about the nature of military service, from films and television. So it is that images of Britain’s current ‘security challenges’ veer in a series of pendulum swings from battle scenes reminiscent of the Second World War to sci-fi computer gaming. And popular images of military personnel themselves are imprisoned by ‘lions and donkeys’. All the serving boys and girls below the level of lieutenant-colonel are heroic lions performing on foreign fields. But alas, once promoted to colonel or one-star officers, lions suddenly become donkeys, subject to incompetence and foolish vanity – Blimps who cannot think clearly or plan properly.

Of course, these media-driven images are neither accurate nor very helpful. The extremes they portray are not either/or realities. There is a hard reality to conflict and warfare where boots on the ground, ships at sea and aircraft overflying territories really matter. But their presence can only be effective as one physical end of a completely new spectrum of informational,

technological and scientific capabilities that the modern state has got to be able somehow to mobilise when it needs to. And that also depends on leadership and vision – a great deal of it, though not all – flowing from those military leaders at one-star level and above. Richard Barrons led the Joint Forces Command as one of the six Chiefs of Staff until his retirement from the military in 2016. His military career, and his strategic thinking since, offers abundant evidence of the ability of officers at the level of the Chiefs to embrace so many of the uncomfortable prospects ahead of us and to think clearly about integrating new disruptive technologies into the national security equation. But it is not just a technocratic question; it requires us to think far more flexibly about how we organise our military and security establishments and how we make national decisions and pursue a coherent strategy.

Many of these briefings take the two big talking points for defence analysts in 2020 as their focus for thinking forward – the effects of the COVID-19 pandemic and the approach of the Integrated Review that was finally unveiled in March 2021. In fact, they were intimately linked, not just in the way the pandemic threw the Review process onto the back-burner for many months, but also in the way the pandemic suddenly brought home to the media image-makers of popular defence thinking the power of hostile pathogens on a modern society; the ease with which governments can persuade people to have their movements tracked; the vulnerability of modern society to disruption; the importance of genuine resilience; and the way governments turn to the military when they are out of other options. The COVID-19 pandemic became an involuntary stress-test on many aspects of Britain’s future security.

But COVID-19 also distracted the authors of the Integrated Review from greater consideration of different challenges which Richard Barrons outlines here – the centrality of using artificial intelligence wisely in security policymaking; the real nature of autonomous weapons systems in future warfare; the possibility that a complete re-thinking of Armed Forces will be necessary to embrace the transformational changes we all recognise (but would prefer not to think too deeply about). In September 2020 he offered a challenging yardstick against which the forthcoming Integrated Review might be measured. Now the Review is published and work is underway

to implement it, that September 2020 essay remains, for me, the yardstick I keep most in mind.

Not least, as a former gunner who served in so many operations both as a single service and later a joint forces officer, Richard Barrons cannot resist offering his views on the 'New Model Army' on which the Government pins many of its defence hopes for the 2030s. Cromwell's original New Model Army was disbanded after 15 years, but in that time it revolutionised thinking across Europe about how armies should be raised, trained, equipped and led. It will be interesting to see if Britain's 'New Model Army' for the 2030s has a similar effect.

As these essays originally appeared throughout the middle months of 2020, their effect was intellectually thrilling and emotionally discomfiting – as indeed the author intended. In a single volume, and read consecutively, that sense of enthralling discomfort is only increased. This volume lays on the table both an invitation and a challenge to British security analysts.

It's what the Global Strategy Forum does.

Professor Michael Clarke **November 2021**

***Professor Michael Clarke** was Director General of Royal United Services Institute from 2007-2015, where he remains a Distinguished Fellow. He is an adviser to two Parliamentary Committees and Associate Director of the Strategic Studies Institute at the University of Exeter. He is an Advisory Board member of GSF.*



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THE SURVEILLANCE PANDEMIC

All eyes are focused on the extraordinary effects of the COVID-19 pandemic, so it is easy to forget that many other challenges to our way of life existed before the virus struck and these have not gone away. Quite high up the list is the challenge of a new surveillance era as Digital Age technologies, each one created with the best of intent, may combine to deliver extraordinary capability for a state to understand, control, and dominate every citizen. Some of this technological prowess is entirely benign and necessary – infection tracking by smart phone surveillance for example – but we may stumble into a fundamental challenge to how we generally choose to lead our lives.

There are four contributory pillars to this dilemma: the rapid advance of bioscience around DNA and the human genome; the constantly updated digital autobiography we create in our connected lives; the means to know where we all are all the time; and just ahead, the control available through autonomy and robotics in the Internet of Things. The technology to make totalitarianism possible and perhaps irresistible is arriving, a surveillance pandemic, unless we choose otherwise.

First, although the first human genome took \$2.7 billion and almost 15 years to record, it now costs around \$1000 and within 3-5 years this is expected to be \$100. It costs more money to interpret and correlate, but the cost of that falls too. The point is that as this science now crosses over rapidly from academia to commercial and government exploitation it is profoundly significant. As more and more individual genomes are stored in a database (each record is about 150GB) and more correlation is done by AI (causation is a very long way off), it becomes possible to judge and predict (both imperfectly) what each individual's make-up 'means'. This insight suggests that in due course each one of us could have our education, healthcare, career choices, and pension needs influenced by what our genome says about our individual make-up. This doesn't sound a bad thing, for example if a doctor understood our genome sequence he could look out for specific ailments and build bespoke treatments.

It will also open the door to genetic selection, for example a couple may be offered a choice of embryo based on what is inferred by a particular

genome (clever/fast/healthy combinations generally winning over dull, shambling and disease prone?) – though a society composed entirely of marathon-running, brilliant rocket scientists would need a lot of robotic or imported help – someone has to clean the bathrooms. It will also open the door to scientists altering the sequence, perhaps to remove an inherited vulnerability or to insert a desirable trait. All of this raises very difficult ethical considerations about who decides what is permissible and who benefits – wealth will no doubt lead the way, but building a self-reinforcing genetically modified (warrior) elite should not proceed without challenge...

But what if a government *insisted* that every person had their genome sequenced and stored in a national database? The government would then know the genetic predisposition of every person. That same government may also want to ensure a balanced population by allocating embryos by type. Might this also mean that a government that knew the genetic origin of every person and their predisposition might be tempted to discriminate against particular groups thought (by historic correlation) to be objectionable or just for being ‘different’? Might it be tempting to programme into the sequence the predisposition to an early death in response to a particular wavelength of light, and use this once a pension plan had been exhausted? This is the potential dark side of knowing enough about a genome to see off diseases. For the purposes of understanding the potential for a state surveillance pandemic, the day may be coming when the genetic predisposition of every person is in a government database. The Government will ‘know what we are like’.

Second, of course nature is not nurture, and we each turn out to be the people we are as a mix of what we are born with and how we experience and develop. ‘Fortunately’ how we actually turn out is now a matter of easily accessible record: anyone who is connected to the Digital Age leaves a trail, a constantly unfolding autobiography. Our phones, internet use, bank cards, travel tickets and shopping habits tell the truth about who we know, what we say, where we go, what we buy, and what interests us. This is not about what we choose to put in our digital shop windows, but about what we actually do with our lives and say. The data collected on us every day by the large internet services (Facebook, Amazon, Netflix, Google) and

organisations like banks and supermarkets is too much and too complex to be artfully constructed as a lie.

We can see how this truth about each of us is employed in the way companies use AI to dissect our consumption patterns in order to direct goods and news we are interested to our attention. This pleases us (apparently) and generates fortunes in advertising revenue. It is also used by political parties to find and micro-target messages at individual voters in key marginals.

In China, this digital record is a key component of how a ‘social score’ is kept, which unlocks or inhibits how a person may travel or access certain goods or appointments. This sort of surveillance is not popular in a country like the UK...except that we are very likely to submit willingly to tracking that reveals contact with COVID-19 infection, a good thing and perhaps seductive? So, for all its many uses and benefits, the combination of data, connectivity and AI that tracks our digital selves means that a government could know both what our genetic predisposition is and how we are actually turning out as citizens.

Third, the government could know where we are almost all the time. Our phones reveal this routinely, as does the use of any electronic card, or a car connected to the internet, or smart speaker or smart TV in the home, or indeed the fridge if it is connected to the internet and recognises us. The advent of the Internet of Things (whereby almost every device or thing that can possibly be connected to the internet is connected) means that the most humble machine can theoretically be instructed to report when it encounters us. And, as we are creatures of habit, our movement generally forms a ‘pattern of life’, so an alert can be created if something out of the established norm happens.

The ability to predict where we may go next will develop. Of course, this sort of tracking could be turned off or regulated by good individual security, but what if the machine cannot be inhibited or we are barred from doing so, or it can be done covertly? This might help with, say, the protection of the housebound elderly prone to a fall, but it will definitely be a spoiler for many other currently legitimate activities. We all have our lawful little secrets.

If this is not comprehensive enough for a surveillance pandemic, the burgeoning network of cameras, especially public and private CCTV, will generally find us, except in a wilderness – and in a wilderness, if we matter enough, space-based sensors or even commercial UAV technology will fill in the gaps. If a geo-stationary or low-earth orbit satellite can soon track a moving car, undetectable human movement will be increasingly hard. And for the majority who choose to live in populated urban or rural areas and avail themselves of the advantages of a home, a phone, a bank, a bus or a car, the Government could know where we all are pretty much all the time.

We are, therefore, heading for a world where it will be technically possible for a government to understand our genetic predisposition, to see how we are turning out, and to know where we are. What if the government also wants to limit where we go or what we do, and is inclined to take action if in disagreement?

Fourth, ‘fortunately’ the combination of the Internet of Things (IOT) and the developing capabilities of robotics and autonomy will help control and if necessary, disrupt our passage through life. Founded on the IOT, the introduction of more forms of autonomous machines designed to interdict, detain, punish or worse will follow. For example, if identified on a station concourse and known to have a ticket to a destination the government does not favour, it will be straightforward for the law-enforcement equivalent of a robotic lawn mower to seek you out and detain by clamping. We would object to being arrested by a machine, but the same machine that arrests a known axe-murderer on an outing is a good thing? As huge numbers of swarming (i.e. cooperative) micro-UAVs are built these could be distributed on charging points across a city – or country – ready to be activated by your presence in order to follow or intercept. In some cases, perhaps that micro-UAV is armed with explosives (see ‘Slaughterbots’ on YouTube). Or perhaps, more prosaically, your driverless car follows a remote instruction to slam itself unaccountably into a motorway bridge support at 69.9mph?

Some of the foregoing is still science fiction, but not that much and not for that long. The point of this narrative is to illustrate what is going to be technically possible in quite short order, as an inextricable part

of the unfolding power of the Digital Age. There are some aspects of this we cannot really change and others we can. We cannot change that this technology will be made, because it results from rapid, talented, unstoppable and expensive innovation around the world, generally led by the civil sector. Genome sequencing, the smart phone, the IOT, are all extremely well-intentioned – in fact their creators are generally allergic to security applications, in the West at least. What is neither foreseen by the creators nor easily inhibited by the users is the darker use this technology may be put to, sometimes singly and more particularly in novel combinations.

Regulation has a role to play yet regulating something that has not existed before is difficult and there is neither a global consensus on what to regulate nor the means to enforce it. China's approach to innovation is to 'let the bullets fly', to see what is produced and only step in where public or political disquiet appears, and China has an entirely different view of the role of the state and the limits of surveillance from Europe. The measures taken to monitor and control the Uighurs is a clear example. In the West, there is a preference for establishing a clear, definitive regulatory landscape before innovation is let off the lead, but as the innovation is hurtling along anyway this regulation effectively lags by 3-5 years. The debates still underway about regulating the use of personal data or the taxation of the big internet service providers show this.

The vital questions anyway are political and social more than legal. At the national level, if these technologies are coming along (and they are) what do we think is acceptable and how might we assure that limits are respected? We can be clear that states will come to different conclusions about both their internal affairs and how they employ technology in their international relations – cooperative, competitive, or conflictual. The capacity for manipulation and harm to be caused in UK by a foreign power exercising the sort of surveillance described above is surely troubling?

We might make a decent start to tackling a surveillance pandemic by understanding what is going to be *possible* in order to decide what is *permissible*. This requires policymakers and civil society to invest in thinking and managing a degree of complexity at reasonable tempo. Even

when understood, it will not be possible to limit or prevent everything we might object to all the time (assuming such a consensus exists). We will need to take a 'risk management' approach, focusing effort on the aspects that are really important and letting the merely unattractive go by. We will certainly need the will and the means to enforce, no matter how powerful or stateless the targets are, or we will find our laws and values are comprehensively outflanked by technology 'we' built and use but fail to control – a triumph of human ingenuity over judgement. Like all pandemics, if the prospect of a *surveillance pandemic* occurring is clear, we have only ourselves to blame if we are not ready when it occurs.

5th May 2020

BEYOND SHOOTING AT OUR FEET: UK STRATEGY FOR A HARDER WORLD

The shock of COVID-19 is profound, touching almost every aspect of how the UK lives, works and plays. There is a long way to go to defeat the virus, the economic price already eclipses the bill for the 2008 financial crisis and will rise. To say that this is a lot to deal would be epic understatement, of course government and public discourse is dominated by the immediate and direct consequences. It will make us even more uncomfortable and uncertain when we are reminded about the other huge challenges to the UK's security and prosperity that existed before the virus struck and that these have not diminished one jot.

As the virus recedes (for now), setting the best course for the UK demands a lot more than addressing just the effects of the pandemic. We are already campaigning against a combination of tough, enduring and concurrent challenges, not just one disease. We need to re-acquire the virtues of governing ourselves with greater strategy and statecraft, no longer relying on the agile event management we have preferred for some time. Our future is not secure if we can only shoot at what happens to be at our feet.

First, we should take detached stock of the strategic shock that COVID-19 has brought to our economy and society, and examine our response. At the time of writing UK deaths are approaching 30,000, schools and universities are closed, and commercial life is severely impeded: we are already in a more difficult place than any in living memory. Nonetheless, it is not such an existential risk that it really equates to the threat of invasion and destruction that was felt in the Second World War and to lesser degree in the Cold War. COVID-19 has exposed both how comfortable and how fragile our way of life is, but this really should not be a revelation. We have seen the veneer of civilisation shattered extremely rapidly in other prosperous and developed places, for example by war in Sarajevo in the 1990s or New Orleans by nature in 2005, and we see millions of fellow citizens on this planet existing daily on the edge of sustainable life. If we have mistaken decades of comfort as a guarantee of future immunity from harm we were being naïve.

We know that the risk of a pandemic was at the top of our national risk register, so we were good enough to recognise what could happen, and yet not good enough to invest in sufficient preparations. We could have managed COVID-19 without resorting to a considerable degree of crisis management on the hoof. There is something to celebrate in how our national response has come together, but we could have made it easier by laying in the stocks and equipment that had been recommended, and by investing in greater public awareness of the generic risk and how to respond to it. We have chosen to maximise effort to save lives at the price of breaking the continuity of activity and investment in our economy, education and community life, financing the bill with massive additional debt.

The public and private financial bill is already huge (perhaps £200bn so far) and we know that as soon as the first wave of infection is contained, we really will have to manage risk differently. It's just not sustainable to trash our social cohesion, education and prosperity as the price of containing this particular disease, and that includes the high likelihood of a second wave. We are going to need a different strategy for the long haul.

We can also see the global response to the pandemic has illustrated the limits of multilateralism and of relying on international organisations. Each country has determinedly taken its own path in how it responds to the disease. Similarly, having enjoyed the many advantages of globalisation for decades we are now acutely aware of the limits of long, monopolistic supply chains and the vulnerability of much reduced sovereign independence when things fall apart. This may be at odds with how we think the world would work better, but we need to recognise how it is now – preparing accordingly as well as aspiring to improve.

It is understandable that almost all the bandwidth of our government has been absorbed in getting on top of the needs at the moment. It is also explicable that in thinking about what happens next the conversation has been focused on recovering from the specific effects of the pandemic in all its many dimensions. The problem for us all is that limiting our national thinking and endeavours to just this task will not deal with the much harder world that we are already in and must anticipate getting worse in the years to come. Nor should this be a surprise: there were many

significant, strategic challenges on our plate before COVID-19 struck and we were talking about them.

If we lift our eyes off our shoes we will quickly be reminded that we still have to settle the terms of our departure from the European Union, and we are now going to do this in the different financial and political circumstances created by the pandemic. What does this really mean?

We also were quite focused on a difficult relationship with an assertive, ambitious and disabbling Russia as it postures against NATO, pokes about in our national affairs - particularly our cyberspace and social media - and tries to sow weakness and discord. Russia is still building influence in the Middle East and Africa where the West (in the absence of the US leadership we had grown used to and our strategic weariness following the struggle to succeed in Iraq and Afghanistan) has ceded the field. What are the consequences going to be?

There are still two strategic capability conundrums concerning Russia that have to be resolved: its developing conventional military edge and its capacity for 'hybrid' or 'grey space' confrontation. None of our recent Defence Reviews have closed decisively on how to manage Russia's military advantage in: precision long range conventional missiles in attack and defence; modern submarines; offensive cyber forces; space-based capability; and the rapidly deployable conventional forces designed to seize key bits of NATO or other territory well before an Article 5 response either deters or deals with it. The March 2018 Fusion Doctrine articulated very well how the UK is vulnerable to states like Russia that combine all their levers of power short of military force in order to confront and undermine on a rolling basis. Yet we have yet to build the national capability to identify, deter, defeat and if necessary attack in this 'space' beyond some pretty good event management such as in the Skripal incident. We can see that what is still required is the fusion of our own public and private sector power on an enduring campaign footing to protect our interests. COVID-19 has not changed this.

Immediately before COVID-19 struck we were very focused on the manifestations of mankind bumping into the limits of our planet's ability

to manage our demands and abuse. It was not so long ago that floods in the UK, wildfires in Australia, and rainforest depletion in Brazil were filling our minds. We are still fairly sure that we have about 10 years to change how we live, in a world where population growth and expectations will substantially exceed the supply of even water and clean air, or we should instead plan to live with the consequences of rising sea levels, the irrecoverable loss of many species, and desertification. COVID-19 illustrates that (to paraphrase Harari) 300 million tons of mankind, 700 million tons of domesticated animals, and 100 million tons of wildlife have to come to a different arrangement because the planet is neither inexhaustible nor disposable.

The origin of the pandemic in Wuhan has brought the issue of China as the major strategic driver of our age much more sharply into focus. The emerging truth that we now live in the Asian century, no longer in the world dominated by the post-World War 2 US-led consensus and its associated 'Rules-Based International Order', should not be a surprise. As we have struggled with the disease, we have also seen the first rail traffic from China reaching Europe in 18 days rather than 30 by sea - and we should take seriously the prospect that with high-speed rail the journey time to Rotterdam could be just four days.

The flexing of Chinese military power in the South China Sea, which despite the UN Convention on the Law of the Sea, is becoming the sovereign water that China has claimed since 1947, also illustrates that China is through with its policy of 'biding its time'. Whilst we cannot predict the precise path China will take nor how the US will respond, we can be sure that our future prosperity and security is now bound up in a complex relationship with China. This relationship will be unequivocally one-sided unless the UK can make common cause with like-minded states - even though the response to COVID-19 has just undermined general faith in multilateralism. We are outside the EU but stuck with geography, so there is a lot to Zoom about with Brussels.

As an adjunct to the emerging economic dominance of China we had also begun to see how profound the effects would be of the AI driven 4th Industrial Revolution. We know how we live, work and play is being

transformed by combinations of digital age technology. Some of this we have seized on with alacrity: the advantages conferred by Uber, Amazon, Facebook, and Airbnb. Some of it we may be a little nervous about, such as the privacy of our personal data and the scope for the manipulation of what we think we know from social media.

Other aspects we have hardly begun to examine: the significance of gene engineering and the implications of AI and robotics on employment and the role of work in our society. We do know we are about to see the displacement of millions of people, white and blue collar, from the employment that they regarded as the secure, golden thread in a useful and prosperous life. Unlike previous industrial revolutions, the displaced in this case have a vote, political confidence and the voice and organisation conferred via their smart phones. We might prefer to restore what we saw as the normality that existed before COVID-19, but the world was already going to change profoundly. What do we think about this? What are we going to do about it?

As we pick ourselves up after the pandemic all these challenges will be there as ineradicable features of the strategic context in which the UK has now to survive and prosper. It will not be sufficient to address just one of these, or just one at a time. In fact, the combination and concurrency of managing Brexit, Russia, the planet, China, and the AI industrial revolution will set the bar for what counts as competent government. This is not going to be managed successfully by relying only on resource agility, debt, deft crisis management and a dollop of hope communicated with polished chutzpah. The UK will find that it is a modest voice in this more fragmented and turbulent world, our economic and political clout will still matter but it will rarely be decisive unless well-orchestrated with others. Our reliance on the rest of the world for around 40% of our food and energy, for the trade in services and capital that drives our economy, means that isolationism is simply not an option.

We need a national conversation about our place and progress in the world that recognises the essential fragility of how we like to live. We need to discard any sense that our comfort and security is somehow inalienably guaranteed and accept that unless we are prepared to act, with others, to

protect our values and interests we are very likely to be trampled upon by accident or design. Some of this means being quite forceful about what we must protect, but a great deal will rely on forging an international consensus that supports the durable operation of trade and relations across a stressed and turbulent planet.

Can our politicians and officials find the ability and space to think about the full complexity that we face and offer us policy choices that are realistic and balanced? Many in office do seem to find it tiresome to have to think about the balance between ends (the outcomes we would like), ways (the routes to getting there), and means (the resources, plans and activities needed to deliver). But we are not going to succeed if we just make lists of desirable outcomes and hope for delivery by combining rhetoric and small tokens of effort. If our politics is entirely consumed by responding to a well-tuned sense of what the majority of people reckon at any particular moment, and a fixation with managing that sentiment hourly towards the most imminent election, then we deserve the poverty and insecurity that will ensue. We can choose to recognise that we now live in a different time that requires different treatment, and that means some strategy and acting on it in ways that are necessary even if hard and not immediately popular.

Perhaps top of this list will be the requirement to reset national resilience. This will obviously be so in terms of dealing with challenges to public health such as pandemics, now we have experience of one, but it will not be enough. Our daily life needs to be secure from the malicious depredations of states who would prefer to see us weak and divided. A priority is to protect the cyber and physical security of the critical national infrastructure that supports how we live: power, water, fuel, food distribution, traffic control, banking, telecoms, and much more.

We also need to accept that by accident or in confrontation or conflict we may actually lose at least some of this for periods of time. Uninterrupted broadband is not yet a divinely guaranteed human right. As citizens, institutions, local and central government we need to build back the ability to maintain essential continuity of life and government and be more resilient to adversity. An element of this lies in educating and organising citizens, especially as they leave school, about how the world really is and how they

should respond on a tough day. It will not be enough to think that we can all continue to lead our lives in great liberty and happiness, assuming that when anything bad happens the Government will sort it out.

The conversation we now need to have about our defence and security is not the conversation we have been struggling to conclude for about the last 15 years. We are still inclined to think of defence in terms of a battle for territory by massed conventional armed forces. We seem to think that war only happens abroad, where our participation is now entirely discretionary and that if we choose not to participate there are no adverse consequences. The fact is that the risks to the UK homeland has already fundamentally changed and we have not kept up with them. There is no risk of a Russian invasion of UK, Russia neither has the means to accomplish this nor the will to manage the price of occupation. The same applies to most of NATO, except for those areas which Russia believes are ethnically supportive or strategically vital – and here Russia has some of the means for rapid and effective action. So deterrence and the capacity for credible intervention in Europe still matters, but it is different in form from the 1980s.

On the other hand, the military capability risk to the UK homeland is now potentially much higher. This is the result of a combination of: new generations of nuclear and conventional missiles, offensive cyber capability, and the direct route available to the minds of almost every citizen through their mobile phone. Breaking the will of the UK (or any other developed European country) does not require conventional invasion when it can be accomplished by the destruction of daily life and public will through an assault on government, critical national infrastructure, and the mobilisation of the Armed Forces by a combination of missile and cyberattack, well amplified by the manipulation of public morale through misinformation on a grand scale - but not 'boots on the ground' other than agents and proxies. We need to be able to defend ourselves against this sort of 21st century attack by now transforming our armed forces for confrontation and conflict in the Digital Age.

This certainly does not mean that we only need to think about protecting the homeland. In the world that lies ahead challenges to our vital interests (security, prosperity and values) abroad will arise from a complex combination

of instability, accident and aggression. These will not be discretionary issues in the way that we wrestled with Iraq and Afghanistan, these will be existential: civil society afraid or outraged, demanding the Government acts. We will need to be able to act abroad in a sophisticated way: a combination of effective diplomacy (skilled people with money to spend); military and civil military capacity building so our friends can do a better job at looking after themselves; rapid and quite likely forceful intervention to shore up stability in very fragile and significant circumstances; and the will and means to fight - alongside others - if vital matters reach a violent impasse. And when we have to fight in someone else's homeland, we cannot in future assume our homeland is somehow still inviolate. Military alliances like NATO that have had a defensive purpose defined by territory will need to be reset not just to deal with new forms of capability but also new risks defined by interests more than geography, or they will rightly wither and need to be replaced.

Simply filling in the current holes in our Armed Forces or, more likely in the circumstances we now find ourselves in, just having a debate about how to trim further to fit a lower budget will fail to meet the risks we face. Fortunately, the route to building effective UK Armed Forces at a sustainable price has already been defined by the thinking in the MOD around the coming 21st century military transformation through the application of combinations of digital age technology. Just as the AI industrial revolution is transforming how we live and work, it transforms how we confront and fight. When it does so it will unlock the same degree of savings in people, equipment, support and activity that other industries have made.

We know Navies, Armies and Air Forces built as a mix of manned, unmanned and autonomous capability are coming; what is currently missing is the political will, engagement, leadership and investment to drive and support making these fundamental changes in organisation, equipment, and method. Of course this means substantial disruption to long-established institutions, industrial policy, and acquisition - and this is unavoidable in the world where the benchmark for competitive defence capability is being determined by others, not our history or preferences.

So we have some choices to make. We can focus all our energies and resources on containing COVID-19, managing just the consequences of this,

and aspire only to go back to the normality of February 2020. Or we can recognise that life as we knew it then was already under assault and things were going to change anyway. The biggest choice ahead is to be good enough as a society and our Government to come to terms with a new strategic context, to manage complexity and concurrency, to make good strategy to address it, and commit to seeing through the hard choices this will entail. This is a tall order, but the price of just looking at our toes will be far steeper.

12th May 2020

RESILIENCE IS THIS YEAR'S BLACK

The COVID-19 pandemic is a sharp reminder of the fragility of government, civil society and our ways of living around the world in the 21st century. This is as true in European countries that have not had to contend with a strategic shock on this scale for decades as in less well-developed countries with weaker government and health infrastructure. States that were focused on how to grow and thrive have suddenly found themselves juggling the risks of a rampaging disease with the mounting associated costs to economy, public finances and education - and all the consequent long-term disruption to the lives of millions.

It is equally true that other risks to our daily life and security have long been evident: regional flooding and wildfires connected to a changing climate; cyberattack on power, banking, internet connectivity and other vital services; humanitarian catastrophe from famine, mass migration and war; and extremists bent on acquiring weapons of mass destruction. In the military domain, nuclear weapons have proliferated and the risks of conventional war now include the threat from very long-range precision missiles targeting Critical National Infrastructure as well as armed forces. Every state has a different situation, but all share the dilemma of finite resources and many have populations growing in size and expectations - and vulnerability. Globalisation has brought many benefits, but also the fragility of long, international supply chains, 'just-in-time' logistics, and a general reduction in national independence across food, energy and consumer goods.

On top of all these physical risks are the cognitive challenges that come with the expansion of mobile (smart) communication and social media. Most citizens in developed countries are now accessible individually and instantly with powerfully expressed information, whether or not this is based on fact or even deliberately false. Public understanding, will, and morale is as vulnerable to shock as any physical entity, and must be protected in a crisis.

All this means that sustaining a state's 'resilience' is - or should be - higher today on the agenda of all governments and many citizens, spanning

natural or man-made disaster, economic crisis, and conflict. Government must function whatever the circumstances – able to understand, decide, plan, communicate, and coordinate, maintain security, assure vital services such as water, food, fuel, waste management and emergency healthcare and if necessary, mobilise, deploy, operate and sustained armed forces, including their industrial support. In Europe and no doubt elsewhere the measures that existed to support national resilience that were common during the Cold War have long been eroded or have lapsed entirely. Most political leaders, officials, and citizens are now encountering these challenges for the first time and learning ‘on the job’.

With all the power of hindsight, when we eventually look back at COVID-19 we will see that we had identified pandemic risk as perhaps pre-eminent; decided not to prepare thoroughly; responded to the initial reports slower and less assertively than we wished retrospectively; struggled to make up a shortfall in preparations with as good a mix of crisis management as we could muster; found there is more to crisis management than we thought and could have done better; and paid a higher price in economic, social and reputational terms than might have been necessary. But we did survive and we could say the same about almost every significant resilience crisis ever, from mad cows to major flooding. Hindsight-enabled chest beating alone rarely does much good for preparing for the next crisis, but if the 21st century is as challenging as it currently looks, perhaps we should do better at resurrecting resilience as a core requirement of government and civil society?

One thing should certainly be clear: addressing all the challenges to security and prosperity faced today by governments, armed forces, institutions, businesses and citizens requires more than skill at ‘event management’. No leader or organisation can manage situations that pose an ‘existential’ threat to the continuity of normal life, particularly not if they are enduring and complex, by hoping to make only marginal changes to priorities, operating parameters and resources. The sort of ‘just in time’ approach that does underpin efficient business and logistic practice is very likely to struggle when confronted by a huge and rapid change in the operating environment such as a tsunami, an earthquake, a pandemic, a strategic cyber assault, or a major conflict. In these circumstances things

like contingency plans, training, reserve stocks, fall-back information systems and rapid mobilisation of people and equipment will all support an effective response, and most of them cannot be well constructed in the heat of the moment. Good crisis management skills are certainly imperative, but not a complete substitute for substantial preparation and training if a major shock is to be managed as quickly, effectively and cheaply as possible. Most nations will reaffirm this point when in due course they review their passage through COVID-19.

Nor is it possible to try to keep everything running exactly as it was, with no reductions in goods and services or the flow of daily life. It is not possible to try and protect everything equally, nor assume that everything can be defended in the same way. In a cyberattack, for example, there will always be some penetration so defence in depth is required, and in a pandemic power, water and food supplies must be maintained as well as hospital capacity increased. It will be necessary to prioritise addressing the risks that matter the most through thoughtful, well led risk management. This also means consciously deciding what is less important and can be temporarily foregone, which in turn implies good data science, sound planning, robust operational and logistic processes and excellent communication skills.

It also means a place for political vision and real strategy. In the management of the pandemic there was some vacillation between going for 'herd immunity' and relying on protection by locking down the economy, civil society and education. The aim was to save lives and stop the NHS being overwhelmed – and thereby lives being lost in a more unrestrained way. The cost in terms of debt, wider health, prosperity, educational attainment, and cultural life was always going to be huge by any historical standard. Even before the end of lockdown it is becoming clear that a balance has to be struck between saving the lives of many from an infection and wrecking the lives and prospects of many more as a consequence.

In short, if our hearts demanded *risk avoidance* at all costs, our heads always recognised that we would have to come to terms with *risk management*, juggling keeping the pandemic at reasonable bay whilst

sustaining our national fabric and prospects. This means more people will die from the virus than if we locked everyone up at home at public (i.e. our collective) expense for months, but it also means a tolerable societal bargain. It is important that striking this bargain is led by politicians who set out the broad, long-term issues and consequences that justify significant shorter-term pain.

The requirement to reset our national resilience has illuminated some skills and characteristics that make a difference, which include:

Leaders. Leaders who are personally prepared for the demands of crisis in terms of their ability to think clearly and rapidly, take good decisions in conditions of great uncertainty and stress, articulate their intent and direction clearly and concisely, inspire and support their teams, and communicate to a nervous and sceptical audience. This requires investment in the education and training of political, official and industrial figures, as well as ambition and confidence.

Responsibility. A resilience crisis that touches everyone becomes a collective responsibility to resolve. The temptation for people to expect their government to specify behaviours and outcomes in every single set of circumstances has to be converted into a sense of distributed responsibility where people apply their own initiative and understanding to decide how to act appropriately. Civil resilience is only possible with individual compliance and self-discipline, which will echo historical calls to 'civic duty'. Of course, some will choose to deny their responsibility to conform, and many will consciously or not sometimes breach or test the boundaries (like the school-run parent who parks 'just for a minute' on the prohibited zone at the gate). As we have already found, a tiny part of this can be enforced by the police, much more is policed by community and family pressure, but in the end resilience needs responsible adults.

Information. Most crises are a surprise, create uncertainty and require new and more information to be acquired at pace. Good 'intelligence' is the essential precursor to good decisions. Part of the answer to this lies in good data science: finding, fusing, analysing and visualising as much data as possible supported by well-judged AI. Part of the answer

lies in securing the right, experienced human advice and in sharing understanding with others in a similar predicament. Experts do matter, but they support and do not supplant leaders – there is always a balance to be struck in choosing the ‘least worst’ outcome.

Planning & Contingency. The military are good at formal planning in a crisis environment and often set great store by holding contingency strategies and plans on the shelf. These are often not the perfect answer for the situation that actually arises, but having a plan to deviate from is generally better than having no plan at all and the process of planning itself is always instructive. The art and science of crisis strategy and planning is not endemic in all walks of life, in some cases ‘strategy’ is interpreted to mean a list of desirable outcomes and a ‘plan’ is a more detailed list. Some organisations see contingency planning and resourcing as inherently inefficient. Resilience needs a strategy – what we want to achieve, matched to ways – the lines of activity to be coordinated to deliver that outcome, and to means – the resources that give the ways credibility and power.

Data & Decisions. Resilience requires a structured method for taking timely, accurate and optimal decisions at all levels of government and society. Some of this can rely on the intuition of a single leader, but most leaders benefit from the discipline and rigour of a more formal way of considering and reaching accountable decisions. AI is becoming more useful here in being able to test proposed courses of action at machine speed in advanced simulations. The advent of vast and complex replications of how an entire country works, in the form of a National Synthetic Twin that also connects central and local government in the same simulation at the same time, will be a profoundly important enabler to good decisions.

Operational Control and Coordination. There is little point in having a sound plan if it is not well communicated and coordinated. Part of the imperative here is to have a clear understanding about how the delegation and empowerment works between different levels of a government or organisation. There must be a well understood and practised format for executing crisis management: having a sound plan will not matter much

if it is not well communicated, executed and coordinated in way that harnesses talent at all levels. The military system known as 'Mission Command' is specifically designed for robust operations in highly stressful circumstances, but there are others. Organisations that still try to put 100 subordinates on a conference call with a single leader are very likely to fall, especially should that leader fall ill or implode. At a more prosaic level, common approaches to document formats and information management matter, as does a structured approach to the dissemination of direction and information. A thoughtful daily, weekly and monthly programme of general and specialist meetings within and between levels of leadership is required to drive understanding, planning, decisions, operations, logistics, and communication. The military term for this is 'battle rhythm', but it is no more than a rigorous programme of management meetings to keep pace with events.

Communication. In every crisis leadership at any level has to communicate effectively with a range of audiences, some of whom may be sceptical or hostile and all of whom are likely to be worried. Effective communication is as important in every crisis as sound planning. It is certainly true that any really good plan can be fatally wounded by poor communication. The construction of strong, consistent and well prosecuted messages requires specific expertise able to work across all forms of media including social media. In a crisis the battle for the narrative in social media can work on a 20-minute cycle across a number of platforms and the 24/7 TV and radio news cycle is still judged in hours, sometimes minutes. It will be important to have senior leaders who are confident personal communicators to convey the most important messages, including the ability to take responsibility when things have not worked out well. There will always be lapses, mistakes, damage and casualties in a crisis. Nonetheless, a great deal of communication will need to be managed by skilled teams and leaders must not be seduced into devoting all their time to being in front of a camera or led by an agenda set by the press.

Logistics. Without good logistics there is no plan and there are no operations. The supply and distribution of equipment and stocks are fundamental to success, in fact logistics will often determine the art of the possible and dictate pace in time and space. In a crisis, having

a secure supply of essential stocks at the outbreak is vital to reducing vulnerability to long supply chains and to the competing demands for scarce commodities that invariably appears. As any large organisation knows the business of logistics is a complex and challenging aspect which requires dedicated expertise. Most leaders will find that they need to keep their logistic expert very close at hand and completely integrated into planning and decision-making.

Today's pandemic has typically highlighted the role of the military in supporting national resilience. For most countries, their armed forces are a repository of some skills and expertise that provide a degree of reassurance in a crisis. The Armed Forces can certainly provide help on the spot very quickly and robustly. Some of this help relies on skills such as planning, logistics and some infrastructure construction, and some of it is about labour support in tough conditions such as forest fires or flood mitigation. It is important that there is standing legislation in place to govern the rapid and appropriate use of the military in a crisis, including the arrangements for apportioning costs, as working this out in the heat of the moment is unlikely to be the best route.

It is also important to acknowledge the limits of most militaries in supporting resilience in terms of scale and skills: when the whole of a civil society of millions is in jeopardy a military force of a few hundred thousand cannot do everything everywhere and certainly cannot replicate the skills and capacity of hospitals, police forces, supermarkets. And the armed forces will still have operational duties to fulfil such as maintain deterrence, counter-terrorist support and air policing. In the UK the NHS numbers 1.4m people, the social care sector another 1.6m, and the UK regular armed forces number around 145,000.

The key strategic point is that the resilience of civil society can only met from the numbers and skills found in civil society. This is why many countries today are reintroducing compulsory training for their youth in the relevant skills and understanding of how to act in a crisis and creating large pools of volunteers to support their emergency services. It is much better to have these up and running before a crisis hits, and there will always be another crisis.

Resilience is certainly back in fashion this year, but a cursory look at the mounting perils of this century suggests that, like a good suit, resilience is not going out of style quickly and now needs sensible investment in policy, strategy, plans, capability and training. Or we can just wing it again...

19th May 2020

THE CASE FOR DIGITAL AGE TRANSFORMATION IN THE UK'S INTEGRATED REVIEW OF FOREIGN POLICY, DEFENCE, SECURITY & INTERNATIONAL DEVELOPMENT

The proposed Integrated Review of the UK's foreign policy, defence, security and international development has been pushed into late 2020/early 2021 by the exigencies of dealing with COVID-19. The pandemic will in any case very significantly affect the parameters of the Review, as the virus is brought under control at the price of the deepest recession for 300 years and a different strategic context emerges around globalisation and relations between states, especially between China and the rest of the world.

It was already the case that foreign policy, defence, security and international development needed to adjust for the harsher reality of the end of the post-Cold War era. The relative decline of US power, the relative rise of China, nuclear weapon proliferation, the effects of busting the limits of the planet's tolerance of mankind, the AI industrial revolution, and the systemic implications of factors like global population growth and strategically-relevant levels of inequality were already – and still are – on the agenda.

In defence and security four things were also already clear: first, the present defence programme is unaffordable by at least £13 billion over 10 years; second, the Armed Forces are currently neither big enough nor ready enough to meet all the risks that are emerging; third, there is some excellent equipment but military technology has moved ahead in new ways (led by the US, Russia and China) into capabilities for attack and defence that all European states now struggle with; and fourth, the rapid evolution of 'hybrid' confrontation that integrates traditional means such as politics and diplomacy with digital advantage in the form of offensive cyber and social media manipulation is not being met competitively. Were the IR to focus only on either trimming down the current programme still more or filling in the gaps by buying more of the same, it would be a failure of government.

There has already been some articulation of how the UK could improve its performance by seizing on the advantages of digital age technology. This has tended to be piecemeal and tempted into 'silver bullet' territory. Acquisition reform in defence, for example, is long overdue and vital, but

it's not a good answer if the result is just to buy the wrong capability more efficiently. Establishing data advantage is vital to all outcomes too, and data science in government has a very long way to go to acquire mass open-source data, blend it with classified information, manage it with well-chosen algorithms and use this capability in close support of ministers and officials, not instead of them. Winning information advantage is more than data, though: there is no shortage of political and official tweets to digest, but not yet the comprehensive information capability that spans AI-enabled data collection and fusion and the mobilisation of all forms of influence including cyber and social media in coordinated 24/7 activity.

The generic problem is that most digital technologies today are advancing led by the private sector, whilst the public sector really needs to harness this working out what application looks like and how to pay for it is a struggle. So it would be worth restating the basic case for the application of combinations of digital age technologies to underpin the IR as a fully transformative process. The first and vital point to make is that the potential gains are in both **effectiveness and efficiency**, eventually on a scale to match the gains brought by the profound disruption seen in industry and other walks of life.

On **effectiveness**, harnessing relevant data will lead to a far better understanding of the policy and operational challenges that have to be faced and support better quality, faster, and more accurate decisions. By accessing the largest possible span of data that is available either free or by purchase, adding this to the proprietary data governments already hold, surveying and analysing the combined pool with algorithms tuned to support specific purposes, and then visualising the results in an intuitive way, there will be less uncertainty about what is going on and more clues about where to focus the attention of experts, policymakers and ministers. It is important here to lose 'human' conceptions of scale and complexity: the power of cloud computing and AI is such that vastly more data can be employed than even the sharpest civil servant can survey or jumble.

As an example (and I declare a long-standing interest in arguing for this), it is now possible - and under investigation by HMG - to build a replication

of an entire country such as UK or an entire alliance such as NATO that accommodates and connects: physical terrain down to perhaps 1m detail, the real weather, complex built environments such as cities in 3D, all forms of Critical National Infrastructure such as power, water, telecoms, banking, fuel distribution, supermarket networks, road, rail, air traffic etc.; the 'human geography' down to individual households or even individual phones to show location and movement; prevailing sentiment drawn from trawling social media; the real time location of resources such as police, ambulance, and the military; and almost whatever else is useful: satellite coverage, maritime movements etc. This replication through integrated layers of data could be distributed across Whitehall departments and down to regional and local level: leaders would see the same, complex picture at the same time, adapting and using it for their own purposes. This includes 'decision support': designing possible courses of action and then testing them through simulation at 'machine speed', and then coordinating operations when they take place. This sort of effectiveness gain would work as well for national domestic policymaking, resilience (including against pandemics) and security as it will for the design and execution of very large-scale military activity.

Data-based **efficiency** wins are potentially more significant. This does, however, depend on the appetite over time for achieving disruptive transformation over halting at comfortable accessorisation: the major gains only come with the will to harness technology through really new organisation and method. This is so much more than adding some flashier kit to an existing institution. In terms of how all government departments and military headquarters work, if the collection, fusion and presentation of information about what is going on can be done by machines faster and better and then by humans, then it is possible to work better *and* strip out layers of people whose purpose this has been hitherto. A very much smaller number of people can supply the information needed by the leaders of an organisation that propose or take decisions in policy, strategy and operations. This potential to hire fewer people to support decision-making and to direct activities offers a path to savings not just in recruiting, salary and operating costs, but also pensions. Pensions are a major driver of public sector costs. 'Robots don't have pensions' ought to be a thought echoed across Whitehall.

This scope for manpower reductions in step with effectiveness and efficiency gains is especially important for the Armed Forces, and indeed for any institution that has to work with a mix of people and equipment. Data, AI and the sort of connectivity bestowed by 4G, 5G et seq. offers the potential to reduce the size of military headquarters at the strategic, operational and tactical level by delayering them (the target should be 50%), and it will also reduce the *number* of HQs required (by say 50%) as greater centralisation in secure facilities becomes possible.

It will also reduce the numbers deployed into harm's way. Quite apart from new *organisation*, new *methods* become possible as technology supports better ways of understanding and assimilating a military problem, producing and articulating plans, and coordinating operations. Military command and control today is an evolution of General Staff practices first developed in the mid 19th century, and as ripe for disruption by the Digital Age as accountancy, law, architecture and insurance. The same principle can be applied in the work of the Foreign Office, Intelligence Agencies and DFID: how many people can be stripped out of work that machines just do better, and placed in more creative, supervisory or contact-facing roles – or released?

In addition, the evolution from military capability built around people manning complex equipment that we can trace back for at least 150 years will now inflect towards a planned mix of manned, unmanned and autonomous capability. This will deliver new operational competitiveness and great efficiency. We are already seeing the Services deploy unmanned ships, submarines, aircraft and vehicles and we know that this trend will accelerate fast as robotics and autonomy advance in the 'Internet of Things'. Advanced missiles, radars and communications no longer require highly complex manned platforms to be deployed and operate – they can increasingly be built as unmanned autonomous networks. A modern destroyer can cost £1bn to build, a networked 'team' of a larger number of small vessels with no people on board but carrying the same sensors and missile launchers much less.

As it becomes commonplace to deploy weapons and sensors into operational settings that do not require people to accompany them, so we can acquire greater military effectiveness, resilience and scale. Restoring the air and

missile defence of the UK through a network of unmanned missiles and radars 'in a box', all of which need some maintenance and oversight, but none of which require a large number of people to be ready 24/7, would be a far cheaper and effective solution than the complex systems operated during the Cold War.

This sort of change will also mean that the metric for judging the efficacy of a Navy, Army or Air Force is no longer the number of expensive regulars that they can afford to employ nor the number of highly complex 'capital platforms' that they can afford to build. Defence acquisition costs will fall when no longer focused on a very small number of very expensive iconic items but instead on a planned mix of manned/unmanned/autonomous capability. Equipment support costs will fall as unmanned and autonomous platforms do not need to train in the same way as all-manned solutions. Nor do these platforms need houses, hospitals, food, leave, pay and certainly not pensions.

It will also mean that the balance between regulars, reserve, civil servants and contractors can shift in the evolution of a Digital Age 'Whole Force Approach'. Uniformed personnel would not be needed to maintain equipment out of harm's way that civil servants or industry can do better and more cheaply. Full-time regular forces would still be needed to maintain high readiness, to deploy on enduring missions, to master complex tasks that justify permanent effort, and to provide a framework for mobilisation and training. Public-facing stabilisation roles, capacity-building and partnering with our allies abroad will always be a human-intensive undertaking for regulars and reserves. But where the capability is only used occasionally or can be mastered in the time that a volunteer reserve can make available, then many greater options will exist in holding that capability predominantly in the Reserve forces.

Of course, this also means that the political will must exist to compulsorily mobilise reserves when the need arises, or the savings will be illusory. In addition, Digital Age simulation will improve training, experimentation and readiness and reduce the costs when as much as is sensible can be transferred into the vast, complex replications of the operating environment described above.

We should assume that the forthcoming Integrated Review will be driven by the imperative to restore capability for a far more challenging world and to do so at a price that reflects a crushing recession. But we should assert that it is also a once in a generation opportunity to transform how the UK understands its place in the world and acts effectively in it. In the military domain we are on the cusp of the most profound and concurrent transformation of intelligence, surveillance, reconnaissance, command and control, and combat capability for over 150 years. Seizing this opportunity requires thinking about technology that is more than the application of a particular widget to embellish the current ways of working with some digital magic. Genuine strategic thought is now required to examine how to affect systemic, disruptive transformation over time across defence and security that changes how we understand the world, decide what to do, make and issue plans, and conduct a range of activities in intelligence, foreign policy, defence, security and international development.

The prize is globally pacesetting capability as a sustainable affordable price, even if some additional investment is required to get moving. This potential will never be seized unless we are able to muster the political vision and will, the military capacity, the industrial cooperation, and the academic support to create a coherent and high tempo programme of change – a process not an event. The UK could set a global example in how to restore influence and power, bringing along our key allies and alliances, and open a fresh opportunity for industry. This is a much bigger deal than another attempt at balancing an increasingly obsolescent set of government capabilities to a much smaller supply of cash. We now need government to rise to this.

2nd June 2020

CONFRONTATION WITH THE GLOVES ON: THE INTEGRATED REVIEW AND HYBRID CAMPAIGNING

Since at least 2010 the UK has wrestled with the challenge of what is variously labelled ‘hybrid’, ‘grey space’ or ‘tolerance’ warfare: how states confront each other in ways that stop short of armed conflict. This is not new of course, but it is an everyday feature of the contemporary strategic landscape that is blooming. It will – or certainly should - form part of the bailiwick of the delayed Integrated Review as a core aspect of fixing our defence and security. We see how the UK and its interests are being targeted, we have struggled to deter and defeat this and we have not yet built a sustained response above the level of ‘event management’. This will not do as we find our way in the more turbulent world to come.

The attractiveness of hybrid confrontation has obviously risen in the eyes of the UK’s opponents. First, in a much more globalised world of heavily interconnected economies and long, monopolistic supply chains, the *risks and consequences* of war getting out of hand and the *economic price* that would accompany are huge. One of the by-products of the current pandemic may well be to unpick some supply chains, but the point still stands: no developed country is so isolated that it can make war without substantial challenges to its own daily life.

Second, the ideological fervour that underpinned the Second World War and the Cold War has evaporated, or at least substantially diminished. This does not mean that confrontation is over nor that war is impossible, it just means differences occur for more prosaic reasons on a different calculus. This aspect needs care: states certainly want to fight less and less often now, but in a harder world ahead the sparks of existential conflict will multiply, so states may still feel compelled to fight – and to fight unconstrained when they do. Mankind has not yet evolved so brilliantly that fighting is history: even if Europe has enjoyed a generation free from it, much of the rest of the world has not and the future doesn’t look easy.

The third factor reinforcing the prominence of hybrid conflict is that the interventions in Iraq and Afghanistan exposed again the very high price of occupying territory where the invader’s presence is widely resented and

resisted. Russia, for example, cannot think that it could sustain a general invasion of NATO: even if a surprise attack was initially widely successful, it could cope with neither the subsequent full-scale mobilisation of the latent power of the Alliance nor the consequences of occupying territory where hundreds of millions of people opposed it. This is not the same, however, as Russia contemplating rapidly occupying discrete areas where the population may be cooperative or at least supine – the methods used in Crimea or East Ukraine illustrate the point. Again, the lean towards hybrid conflict does not presage the ‘end of history’ for armed conflict – it may supplant it in many cases and presage it in others.

As the point of fighting is declining and the price of fighting rising, a whole new set of capabilities for confrontation have arisen in parallel on the back of the Digital Age. Some of this technology is also changing the character of military hard power, particularly the development of long-range precision conventional missiles to deny very large areas in defence and to inflict great damage on critical national infrastructure in attack. But digital tech is also now in daily use in the soft power capabilities harnessed in hybrid confrontation: cyberattack on information, networks, infrastructure and resources, and the disruption at scale of public will through the manipulation of news and all forms of media, especially social media. It is this opportunity to blend traditional ways states compete, influence or confront another through politics, diplomacy, aid, sanctions and commerce etc., with new and highly influential modern systems that makes the current state of the ‘hybrid’ art such a handful.

Most states are alive to the risk, they have seen opponents tinkering about in their election processes, commercial media content, government and commercial data, critical national infrastructure control systems, and – above all – in the manipulation of public sentiment via social media. Some of this activity is enduring, such as a standing espionage effort against government and industry and some of it has been much more episodic – but no less significant – such as the attempt to murder Skripal with nerve agent in Salisbury. So far, much of this has been annoying rather than strategically damaging, but it is nonetheless disturbing and destabilising and holds the prospect of very real damage occurring in the future. It is also generally well understood that should fighting break out, then this

hybrid confrontation doesn't stop in any way, it becomes a vital part of how war can be prosecuted against the enemy's public will. War today between developed states is more likely to be prosecuted by depleting the continuity of the opponent's daily national life than by seizing untenable territory or by defeating Armed Forces.

We are also quite clear that democracies struggle to be tactically effective in hybrid confrontation. This is a result of: the separation of powers in government; the separation between public and private sectors; and above all because of adherence to the rule of law. Some of the UK's opponents operate monolithic national political systems and are much less constrained by the laws and values that we recognise, enabling them to assemble more centrally directed, broader spectrum and higher tempo hybrid activities. This should not be overstated, as the fundamental resilience of democracies is generally well established and the operational clunkiness of some opposing states is also a matter of record. Nonetheless, where an opponent of the UK has the means, the method, and the opportunity to inflict hybrid harm, it does appear to be quite readily taken up.

The UK's recent response has been framed by the Fusion Doctrine set out in March 2018. This captured the character of the risk very well and set out a basic framework by which it could be understood and tackled. A great deal of emphasis was placed on the role of Senior Responsible Officers (SROs), generally at three-star official level, who would lead the Government's effort across all departments. This was a good conceptual start and was matched by some sharp form in competent event management. The coordinated expulsion of intelligence officers by many countries after Skripal was a marked success. The problem is not that the challenge is not well articulated, nor that occasions cannot be risen to, the problem is that the response has been too thinly and narrowly cast to be able to mount the campaigns of enduring, effective responses and initiatives that are needed against the global competition.

In the face of the more monolithic, directed hybrid challenges posed to the UK, our preference is still for light touch coordination across Whitehall, this is a collegiate, consensual approach to activities where Departments often determine *what* they will offer as well as *how*. Where closer, more

centralised control has been employed it is often only in response to an incident right in the public eye. These moments have been dominated by pressing very short-term imperatives (particularly media-related), and more enduring and strategic considerations have perhaps been under-represented in the balance of measures adopted. The risk is that the 'whole is less than the sum of its parts'. This matters less from the perspective of resource efficiency, rather more that if it is not competitive against less constrained, more aggressive and richer opponents waging their own long-term campaigns, especially if sharp-edged, strategic differences are at stake.

We need to find the will and the way to advance from event management to enduring hybrid campaigning. An accumulation of the measures offered up by Departments and Agencies calibrated against their own views of their resources and priorities will have value, but this blobbing-up approach does not readily constitute a rigorous reconciliation of ends, ways and means. Doing better could include: the ability for SROs to establish and disseminate a single common understanding of the problem; SROs being required and resourced to articulate a single, common campaign plan – endorsed by the NSC - which directs the effects to be contributed by Departments over time (just the 'what', not the 'how'); and SROs' having the authority and the means to coordinate delivery, review progress and to hold delivery to account. SROs in turn would be accountable to the NSC via the NSA.

This is a tall order for Whitehall in its present form, especially as resources are issued direct to Departments, each of which has a keen-eyed Minister and PUS to account for them. SROs may see their loyalty stretched between their cross-Whitehall coordinating role and their departmental leadership's views (including of their future careers). The problem is exacerbated by the lack of a common grounding in how hybrid confrontation works and how to manage it (the military would call this doctrine. Substantial investment is needed in common education and training for officials (and ministers) so that there is at least a universal lexicon and conceptual framework to draw on.

The height of the order is made much greater still by the realisation that everything noted above has been about the coordination of the public

sector. This is clearly very important; the combined power of the UK Government should be globally influential. But the way the UK makes its way in the world is much more dependent upon the power of the country's private sector: banking, insurance, industry, professional services, law, etc., and extraordinary cultural influence exercised through literature, TV, film, theatre, art and sport – especially global phenomena such as Premier League football.

Some opponents have no difficulty in aligning by diktat across government, banking, law, energy and commerce, and they may interpret the UK's inability to do this as inconsistency or weakness. For example, when travel sanctions are applied to a named individual it may not mean that the property, financial, and legal aspects of their related enterprises are also constrained. For as long as the UK juts its chin out in a confrontation with certain countries, and yet permits their elites to buy up Knightsbridge and educate their children in the UK, there is unhelpful dissonance at the heart of our hybrid campaigning. We might think it better to live with this, but it is worth a hard look.

The orchestration and integration of the public and private sector will advance better by informed coordination and cooperation, but there will probably be a requirement for legally enforceable restraints - particularly in support of sanctions or national resilience. The resilience dimension is especially important and reinforced by the pandemic: there is limited value in imposing hard-nosed influence on an opponent abroad if there are large open goals for retaliation at home. Effective deterrence requires resilience as much as the ability to strike and so also effective hybrid campaigning requires the ability to take hits at home. Some of this is physical, such as the ability to manage the effects of disruptions to the flow of daily life through power cuts or supermarket distribution challenges, and most of this is about the mental and spiritual resilience of civil society.

Citizens have an important part to play in understanding how the world works around them and in being prepared through information, education and some training to play their part on a bad day. This is an aspect of hybrid confrontation where a huge amount remains to be thought about and done.

The challenge is also not a national dilemma any more than military security is an entirely national issue. The collective security arrangements that we take for granted through NATO are not replicated in hybrid organisation or process with our friends and allies. NATO deals only in military hard power, even if it understands the hybrid risk pretty well it does not control the levers of soft power and many allies do not want it to. The European Union has elected (so far) not to align either its small military or its considerable soft power with its economic strength, and post-Brexit will also need to strike a different arrangement for coordination with the UK.

In facing down the major hybrid challenges of our time, which will include shaping the character of most European states' relations with China, it is necessary to build coordination with partners in the hybrid arena. This cooperation will be across politics, diplomacy, economics, commerce, sanctions, messaging, cyber and much else, and protecting each nation's best interest means that this cooperation has to be better than a shapeless profusion of medium-sized forays against vastly bigger players. This is going to take a while to arrange, in fact it means reversing some of the current flow back towards the dominance of states over multilateralism, but the imperative to do better is clear.

To conclude, for the UK to exert the influence it must in competition, confrontation and conflict, it will need to align the combined potential of military hard power (generally in a supporting role), public sector soft power, and private sector soft power. This is a central part of the modernisation and transformation of defence and security that the Integrated Review must tackle. In resolving to do better we must resist thinking that the degree of choice we have is determined by our institutional preferences and habit.

We can rely on the will and cooperation of our friends and the forbearance of our opponents only so much and this is a competition that has already started and in which we are running whether we wanted to or not. The only choice we really have is where do we want to come in the race, and we can be certain that there will be few prizes just for effort.

IS IT TIME FOR A MILITARY COUP?

Ever since the COVID-19 pandemic took hold of daily life in the UK there have been muted calls from off-stage to suggest 'now might be a good time for the Armed Forces to take charge'. This reflects disquiet over the initial preparations for a well-identified risk and the subsequent difficulties of strategic, enduring crisis management, unprecedented in living memory, at all levels of national life and in every corner of civil society. It is certainly to be expected that when faced with natural or man-made disaster, confrontation or war the country turns in some expectation to its Armed Forces to ameliorate the surprise and the jeopardy to normal life, security and future prosperity. The Armed Forces are, after all, something of an insurance policy as well as daily contributors to deterrence, security and defence. They also regularly 'poll well' as trusted institutions held in high esteem, adding to the sense of reassurance in hard times. Could they do more and would we be better off if there was maybe even just a short period where the Armed Forces took full charge of us?

Fortunately, even the slimmest idea of the Armed Forces taking charge of the UK is guaranteed to result in a collective national frothing at the mouth – and not just confined to the more liberally-inclined members of the chattering glitterati. There are some states where the military are a major force in politics and society, able to choose to take power or not and - in the absence of other functioning institutions - better able to provide public order and services such as policing, justice and economic direction.

The UK is not in this club. There is a deeply entrenched antipathy to seeing UK soldiers on their own streets, especially if armed, unless it is for clearly defined and short-term purposes. Several weeks of inspecting handbags at the London Olympics; a few days filling sandbags when rivers have ruined homes; the provision of fuel tanker drivers in a nationally significant industrial dispute; the odd helicopter in medical support of remote places; specialist decontamination after the Skripal nerve agent attack; and an operation to dispose of infected cattle; these are about the UK mark. There is also widespread support for niche services like bomb disposal and very high-end counter-terrorism capability beyond the increasingly sophisticated range of the Metropolitan Police Service.

Any sniff that the Armed Forces could somehow supplant the role of democratically elected politicians and their civil servants has many citizens reaching for their twitter account, marching-trousers and placard kit. Even if they think the Government is morally reprehensible and performing woefully, again, this is still way better than invoking martial law. In fact, demonstrations against martial law would be led by the Armed Forces themselves, who remain studiously and culturally apolitical – and fully aware that they do not have the scale, talent or skills or consent to conceive of running the country. They are kept pretty busy anyway with their own work protecting the UK and its vital interests abroad.

In fact, the COVID-19 pandemic has reminded us that civil society resilience rests in civil society, not the military. There are 1.4 employees in the NHS, a further 1.6m in social care and an appeal found and (more or less) organised another 750,000 volunteers. Tesco alone normally employs around 300,000 people, whilst the UK's Regular Armed Forces today total around 146,000 if fully manned (which actually means perhaps 136,000 today). These figures reflect a comprehensively demobilised society enjoying the fruits of 30 years free of existential military risk.

There is no prospect at all of the Armed Forces running central and local government, and certainly not policing the streets even if every single one of the 126,000 police officers in the UK were minded to cooperate (and they would not). It is, of course, well documented that the Armed Forces have indeed provided valuable support in the response to the pandemic, but even at the peak this did not employ more than 4,000 personnel on any one day - from the 20,000 initially held at various levels of readiness - working across around 70 different tasks. This has included designing and managing the build of aspects of the Nightingale facilities, logistic help with the supply and distribution of PPE (which does not extend to making it or buying it internationally) and providing some mobile test stations. This was all necessary help, but it was not the sum of what brought the nation through the first wave by a long chalk.

On the other hand, if we set aside any prospect of the Armed Forces installing themselves in Downing Street, is there more that the military

could usefully contribute? There is a fair question here about whether the unused capacity that was offered might have been called upon. Perhaps, for example, the military should have run the testing and tracing organisation in place of the manpower found by Serco and an organisation built under Dido Harding in the Cabinet Office? This could certainly have been done using the military command structure across the UK and the military labour held in hand, and probably faster – but whether it would have been as good or as economic is as yet unproven.

Perhaps, however, a far more useful question about the role of the Armed Forces - in UK resilience especially - is not whether the military should 'take over' either the country or the pandemic response (to which the answer is still clearly to pick your niche very carefully), but whether there are aspects of *how the military works* that merit wider adoption, especially in resilience and crisis management?

Few Departments or the Cabinet Office define even to themselves how they orchestrate situational understanding, plans, operations, and logistics clearly, and connect this to others in a crisis. Nor is there much common agreement what a plan is (for some it is a list of desirable outcomes, for others a document of such intricate detail that it will never withstand contact with human enactors, let alone hostile ones), nor how to coordinate activities across many actors, nor how logistics will drive what is actually possible over time no matter how grand the ambition.

Few of our gifted civil servants who rise to prominence by their prowess at formulating policy are as strong in managing complex activities, and those few that can are often carrying an unreasonable burden. The military is very capable at over-complicating things, but for their civil servant colleagues to shake their heads wearily if the utility of a 'campaign plan' is raised (and it always is) is not an educated response. After years of trying to make UK succeed on the international stage against major challenges through a combination of spur of the moment event-management, hope, risk-free tokens of support, and gravitas-infused communiqués, perhaps we could try again at some strategy, planning and taut, enduring coordination of designated tasks matched with resources?

Armed Forces, unlike businesses and most of government most of the time, exist for crisis. They are designed, led, trained and organised to thrive in conditions of stress, peril and uncertainty (as well as look very smart and perform well at synchronised walking). They are the only major part of the nation's fabric that is conditioned to expect to go to work knowing its opponents wish it lethal harm. Armed Forces only succeed if they are resilient, able to take blows and to deliver action that is harder, faster, and more innovative than their (equally agile) opponent. This has led to a way of thinking (which the military labels doctrine, a term guaranteed – unfairly – to have most civil servants' eyeballs rotating to the skies), organising and acting that is specifically designed around the exigencies of warfare, exigencies that have much in common with managing the peril of natural and man-made disaster (and especially where a natural disaster is then amplified by clumsy man-made interventions).

The Armed Forces are heavily invested in the idea of strategy (a balance of ends, ways and means to deliver the desired outcomes determined by policy), the utility of planning (a detailed articulation of activities linked to resources in space and time to achieve specified objectives), and the value of contingency (alternative plans for different situations and uncommitted resources held in hand to deal with inevitability of surprise and setback). They also invest in a style of leadership and a common ethos that has been well-tested in adversity over centuries. No one would argue that all of this is relevant or useful to civil crises, or that there is quite a long list of military failures over the same centuries to point at (and learn from), but to dismiss the whole canon is equally misguided. There are some aspects worth highlighting in the light of current circumstances, relating to leadership, organisation and process

First, a brief word on leadership. Most British citizens (and their political leaders) have acquired their entire impression of military leadership from films and TV. Yet not every British General is Blackadder's General Sir Anthony Cecil Hogmanay Melchett, nor the matinee talent that has replayed WW2 on our screens for the past 75 years. It is regrettable that the prevailing popular caricature of senior military leaders generally emphasises how a strict hierarchy only gets it way by imposing a blind, unreflective obedience reinforced by punitive sanctions. Nobody in the Armed Forces goes to work

on this basis; if they did, they would be a liability. Nonetheless, according to some corners of the media up to about the rank of major/equivalent all officers are splendid heroes battling with Operation Certain Death, and on promotion to Colonel and above stupidity, careerism and cruelty show initiative and integrity the door. Of course, in the military people really are of necessity sometimes sent on missions from which a safe return is unlikely, but to construe from this that senior military leadership is so alien to leading by example, intellect, explanation and consent that it is wholly inapplicable to other enterprises is just ignorant.

Military leadership certainly has the advantage of being underpinned by a common culture, lexicon and universal basic training. It is also fundamentally empowered by a concept of delegation and empowerment wrapped up in the doctrine of 'Mission Command'. Mission Command is theoretically applicable from the highest strategic level to the lowest tactical level – from the CDS to the Lance Corporal in charge of three soldiers. It establishes that the senior leader should: articulate his mission (what is to be achieved, defined as both a task and the purpose behind it); explain his overall approach to doing this; allocate specific roles to key subordinates; and bind it together with the essential supporting coordination and logistic arrangements.

The vital part is that a subordinate is told *what* he is to achieve, not *how* – that is left to their initiative, energy, creativity and experience. This 'act of delegation and empowerment' is a process, a conversation, not a single event or like launching a 'fire and forget' missile. When it works well, which takes time and training, it means that every part of an organisation is engaging all its talents to achieving a unified purpose, with sound and complementary decisions taken concurrently at all levels. Even when it works imperfectly, the results are better than all decisions being taken by a single, harassed leader at the very top, even with a small group of disciples spinning like gerbils around him/her. Very few Generals feel the need to decide what time a battalion bus leaves for the station or even that a bus is needed, a competent Corporal has it safely in hand.

First, has our response to the pandemic so far shown that there is a well-understood and robust system for crisis leadership across central government

and between central government and regions/local government, or is there some room for improvement?

Some aspects are clear to the public: the dominance of No.10, the role of COBRA, and the broad part played by specialist advisory committees. But at least anecdotally, the reports of a huge amount of detailed decision-making being vested in a small circle around the PM; the frustration of some ministers at the lack of consultation, inclusion or freedom to operate independently within guidelines; the tensions between senior officials about their boundaries even on matters such as data management; the alleged frictions between central, regional and local government; and the challenge to communicate with clarity and consistency; all these would indicate that there is some scope to achieve greater unity of purpose, tempo, concurrency and confidence?

This is not to deny in any way how hard it is to lead in conditions of great uncertainty, stress and significance, nor to judge with the clarity that only hindsight bestows, but if there is not a commonly well-understood lexicon, conceptual approach, organisation, and decision-making process to how the UK manages its resilience in a crisis, would it be better if there was?

Second, are there lessons from the military about how a serious, difficult, complex situation can be met with a specifically designed form of organisation? Military 'command and control' has evolved since the late 1800s into a staff system designed for fighting. It includes a common basic structure that divides up HQ functions in way that is clear to its members and to the organisations with which it cooperates, built around nine branches. Of particular relevance to resilience are branches 2 (intelligence), 3 (current operations), 4 (logistics and medical), 5 (planning) and 6 (communication and information systems). These branches and their roles are replicated from strategic (including Alliances such as NATO) down to operational or 'theatre of operations' level and to the higher tactical level of divisions and brigades. This - by design - makes coordination vertically and horizontally more straightforward.

HQs are controlled by Chiefs of Staff, leaving the commander free to command - including free to communicate publicly and to get out and

about. A well-formed HQ makes it easier for key leaders to demand and get information and relieves them of a great deal of detail. Senior commanders who allow themselves to have every waking moment filled for them with minutiae, leaving no time for the clarity of understanding, vision, and direction for which they are actually paid, or to sustain their physical and mental health, are in the wrong job. Are there aspects of this that would improve the resilience of government and civil society?

Third, process: these staff branches and the people who work in them are united by a common method for analysing and solving complex problems (the 'Estimate' process), common information formats such as 'Operation Orders' and a cycle of daily/weekly/monthly meetings (the 'battle rhythm') to cover immediate to longer term matters. It is entirely possible for a military HQ to drown in its own weight of PowerPoint and circular discussion (NATO has no equal at this), but when done well it makes an excellent job of distilling complex risk into timely decisions and actions. It is also sustainable, it is designed to work for as long as it takes by supporting a regimen that allows for sleep, food, exercise, washing and time to think. Anecdotally again, that pivotal local government official trying to manage every aspect of a county-level response personally by broadcasting directly to over 100 different players twice a day is in a race between the limits of his own physiology and the crisis fortuitously ending. Seniority does not confer immortality.

It is well worth recording, however, that this long-established military system for 'command and control' is also about to be comprehensively disrupted by the advent of Digital Age data science, cloud computing, AI, synthetic environments, and connectivity in a blast of delayering and new organisation and process. So is civil government. If there were to be investment in a more common approach to resilience that draws on military expertise it must be forward looking, blending new technology with the still-relevant bits of tested organisation and method.

Some of the past reluctance to absorb military methods or people into crisis management is based on more than ignorance of what is on offer, there is often a fear of a military takeover – that the military is so large and just can't help itself – 'they' will want to be in charge even when the subject

matter is a very civil affair. Aside from the basic lack of familiarity with the military, there is also a very human tendency in other Departments to resist accepting help when they are having a very big moment indeed in their own field. Sometimes this is never overcome, in other cases circumstances force a change of heart (the London Olympics went from zero enthusiasm for uniforms around the Games to around 18,000 on duty).

The military absolutely will take charge if instructed, allowed, or unconstrained, but the record shows a very creditable supporting act to civil servants, police officers, and fire officers in recent years. General Sir Nick Carter has been very careful to reiterate the supporting role the UK Armed Forces are able to play in beating COVID-19. Perhaps another, more committed attempt to place military planners routinely and permanently in other Departments would help to broker better trust and understanding – and planning?

We are not going to have a military coup in the UK, it is a terrible idea. No matter how deep public frustration with the government of the day runs, the Armed Forces are not ever going to be silently allocating names to flagpoles in the Mall (are there even enough?). On the other hand, the Armed Forces will always discharge appropriate, vital and usually small-scale roles in supporting national security and resilience and this needs some preparation and training to do well. The wider question is whether how the military leads, organises and operates has lessons that could be transferred to wider crisis and resilience management? This might be better, and certainly better than none.

16th June 2020

A DIGITAL AGE DEFENCE INDUSTRIAL POLICY FOR THE UK

The UK has a long history of making and selling defence equipment and services. This has met the changing needs of the Armed Forces over time to protect the country and support vital interests abroad, always maintaining sovereign independence in a few essential areas. Defence industry has also provided stable and often highly skilled jobs, perhaps 135,000 are directly employed now, and led to successful exports (£9 billion in 2017).

The industrial horizon, however, now looks more difficult. Current UK defence spending funds only a very small number of technologically advanced platforms, many with only limited export potential, and the trend is for further reductions. The US cuts an ever-larger swathe through major equipment purchases in Europe, with equipment such as the F35 fighter, P8 anti-submarine aircraft, and Apache attack helicopter, winning on both price and performance. European defence collaboration has struggled to overcome the fondness for protection of comparatively inefficient national programmes and industries and battled unsuccessfully for cost-effective compromise in programmes such as Airbus' A400M transport aircraft. China, Russia and India sell ever-improving materiel at lower prices and with fewer constraints.

There are already areas of contemporary defence technology where UK industry is not fully keeping up – partly because the MOD is not funding them. Long-range precision conventional ballistic and cruise missiles including the hypersonic generation; space-based surveillance capability; AI-enabled command and control; and advanced unmanned and autonomous platforms at sea, on land and in the air are some of the capabilities taking centre stage where UK is not leading. The industrial deficit is also partly because confrontation and conflict have acquired new forms of expression through cyber warfare and information exploitation, where different industry is required in what is now a global competition. UK Defence industry will need more than a trickle of business around evolving the diminishing numbers of high-end conventional platforms to sustain the defence and security of the country, ensure commercial longevity, and contribute to national prosperity.

The new way forward on defence industrial policy is staring us in the face. We know that combinations of digital age technology will transform defence and security capability, operations, and organisation just as it transforms how we live, work and play. We are in the foothills of the profound transformation brought by the AI industrial revolution, through well-conceived combinations of data, cloud, AI, connectivity including 5G, processing power, autonomy, robotics, material science, nanotechnology, bioscience and many other technologies. These disrupt and define what being competitive and resilient looks like in almost all parts of 21st century endeavour.

The forthcoming UK Integrated Review of foreign policy, defence and security is an unmissable opportunity to re-cast UK defence industrial policy for the Digital Age. It is the door to resetting capability for the risks that we face at a sustainably affordable price, especially important in a fiscal climate dominated in the short term by deep recession. The same advantages in operational effectiveness and resource efficiency that digital technologies bring to other industries apply equally to defence and security. The risks and costs of persisting with defence equipment and services that are steadily over-matched and obsolescent are clear, so a renewed common effort driven through a new Defence Industrial Policy is essential to put the UK back on the path to security and prosperity. How do we make this happen?

First, this has to be led by politics. There must be a solid recognition that the current Defence Industrial Policy, where it exists, is neither going to deliver the capability that the Armed Forces need in the 21st century nor going to sustain jobs or exports in the way that it has in the past. Only government has the convening power to set UK defence policy, integrate it with our collective security arrangements such as NATO, and resource and incentivise the goods and services that are required. Only government can lead and impose the drive for essential modernisation and transformation as it will cause significant short-term dislocation and disruption of long established and economically significant industries. Government will need to lead the way through necessarily disruptive transformation which will be hard pounding for the Armed Forces and for industry and resisted in some quarters of both.

With major prizes in security and prosperity in prospect this is both hard and non-discretionary; doing nothing will certainly mean ever poorer outcomes

as the rest of the world moves on past the UK military and industry wilfully marking time. In short, the Integrated Review should lead to the Government bringing together the Armed Forces, industry, research and academia, and civil society in common support of the most profound transformation of defence and security for over 100 years.

Second, the new Defence Industrial Policy must be grounded in how the decisive digital technologies are generally led by the scale of investment in research and development that comes from the private sector, absolutely dwarfing what most governments are able to provide. Google alone spent \$26bn on research in 2019, the MOD spends about £1.8bn a year. We need a Defence Industrial Policy which is about the intelligent application of combinations of technologies that are for the most part rapidly developing outside defence and security. There are, of course, exceptions to this where the requirement is so specialist that only a government can provide the necessary investment. Nuclear weapons, missile-firing submarines, offensive cyber tools, and some space-based capability are all relevant examples.

UK industry must lead in bridging between the technology to be found in the private sector and the challenges faced by the UK intelligence services and Armed Forces. An important aspect is to set a Defence Industrial Policy that incentivises industry to produce *propositions* for better ways of delivering defence and security outcomes, instead of mostly waiting for their customers, the Armed Forces and intelligence services, to write a full specification based on quite limited and prematurely bounded understanding of what is becoming possible. We will need contracts that establish an enduring, evolving *partnership* rooted in constructive discussion, rather than traditional transactional arrangements based on specifications laid out in great detail in advance as both the start and immutable end point. In many cases this will mean contracting for capability or services, not just buying a thing.

Third, a new Defence Industrial Policy cannot just be about producing Digital Age military hard power. Our defence and security now rests on sophisticated integration of military hard power, public sector soft power, private sector soft power, and greatly strengthened national resilience in the face of both physical and cognitive attack. We need to invest in how the Armed Forces are equipped, organised, trained and supported, but we also need to invest

in hybrid campaigning tools such as AI-enabled intelligence and situational understanding, offensive cyber, and social media tools. We must also support how resilience is built into all forms of our Critical National Infrastructure, business continuity, government continuity and daily civil life against a wide range of threats, from missiles to pandemics. Emerging digital capabilities such as data-based surveillance, situational understanding, decision support, information security, planning tools, networks, visualisation, modelling and simulation are often this century's spear-tips and as important to Defence and its supporting Industrial Policy as frigates.

Fourth, it follows that a Digital Age Defence Industrial Policy will be a blend of products and services. It will still be important to make things that sail, drive and fly, but most of these things will be the platform wrappers for information. In constructing information-centric capability we will need to promote all forms of engineering, soft and hard. We will also need expertise in the application of technology through new methods, ways of operating and new organisations. This is not just about different kit. The effectiveness and efficiency advantages of new technology are only secured by moving beyond *accessorising* current ways of working. We must arrive at new solutions in which people and machines are blended in an optimal way. This means that a Digital Age Defence Industrial Policy will draw together not just the current industrial champions and capability integrators such as BAE Systems, Babcock, Rolls-Royce, BT Defence, and QinetiQ, but also the technology-oriented services found in the major consulting houses and the capacity for niche agility and innovation championed by university research and SMEs. All are a vital part of the discussion to be convened by government in a national effort.

Fifth, it is not possible to keep pace with rapidly advancing digital age technologies with conventional approaches to the acquisition and support of military equipment. An absolutely vital part of a Digital Age Defence Industrial Policy is the acquisition reform needed to enact it. This is hardly a new thought, but progress to date has been mixed as the MOD and industry struggle to find a new formula whilst also battling with existing contracts and unmanageable resource challenges. Many other potential contributors, particularly SMEs, remain outside the acquisition fence, unable or unwilling to meet the extensive bureaucratic challenges of existing ways of contracting. It

will, nonetheless, need restating that whilst acquisition reform is an essential part of a new Defence Industrial Policy it is clearly not the sum of the problem. The right capability needs to be acquired in the best way, it's not just about how to do the shopping.

Sixth, this new deal won't work without a commitment to experimentation - and that with experimentation comes the inevitability of some failure. Otherwise there would be no need to experiment. As Defence and Security will already be the beneficiaries of massive private sector investment, government money can be focused on experimentation in the adaptation and application of technologies that have generally been matured elsewhere. They should reduce the challenge, but nobody is going to invest in how combinations of digital is technology may transform defence and security unless the risk is well ameliorated with some public and private sector money for experimentation. The MOD's shared investment with Improbable and CAE(UK) in a Single Synthetic Environment Technology Demonstrator is a good example.

Seventh, there is a broad conceptual outline for what this modernisation and transformation of defence looks like, so a Defence Industrial Policy can be constructed around an evolving framework of what Armed Forces and intelligence services around the world are already looking for. There has to be a start somewhere so early moves may feel like random shots, but an important element of the present opportunity for the UK is to produce an industrial policy that delivers Digital Age strategic capability coherence over time, as well as fosters rapid and competitive innovation. The major elements of this framework are likely to be:

- All capability will be founded on a common digital backbone that underpins new levels of operational effectiveness at platform, Single Service, Joint, Inter-Agency, and Combined (multi-national) levels. This backbone is a combination of data in secure cloud, AI, secure and resilient networks where bandwidth is no longer a constraint, and the visualisation and modelling-based decision support, planning, and training enablement a very large scale, complex Single Synthetic Environments (perhaps better known as Digital Twins).

- Intelligence, Surveillance and Reconnaissance (ISR) will change from the conventional reliance on generally closed, secret systems for human intelligence, communications intelligence, and imagery in support of human analysts. ISR systems will be built around access to as many sensors and sources of data as possible. Much of this will come from data that is freely available or can be purchased and supplemented by closed sources. Sensors will include not just the high-end systems operated by Armed Forces, but also networks such as commercial low Earth orbit satellites, commercial radar and 24/7 news. All of this data will be managed by AI, freeing up human analysts for more creative and insightful work as situational understanding is pushed to decision-makers in near real time 24/7. Defence Industrial Policy needs to focus on how technology is adapted and applied in this area and how it keeps pace with the rapid rate of change: just helping analysts write better essays is not enough.

- Command & Control (how leaders and their HQs organise and operate at all levels) will change in the most profound way for 150 years, as data, AI, connectivity and simulation disrupt the long-standing conventional approaches of a traditional 'General Staff'. The number of headquarters, their size, location and operating models are as open to change as any other institution, indeed the lessons from how other organisations have already adapted (such as banking and large-scale industry) will be highly instructive. Main headquarters will be static and back underground, all types of HQs in the field will have far smaller, agile footprints if they are to survive.

- Military forces will transition from a conventional model rooted in people manning equipment (ships, tanks and aircraft) to an ever-evolving mix of manned, unmanned and autonomous capability. This will offer routes to expanding the size and footprint of a deployed force over time by exchanging a small force of high-end manned platforms for a larger force of smaller and often personnel-free networked platforms bearing sensors and weapons. Where this leads to fewer people in harm's way there will be less risk to

life and where it leads to needing fewer people overall there will be major savings in support costs, including pensions. Where equipment is smaller, less complex and more resilient through not having to support people, there will be savings in acquisition, training and support costs. Substantial numbers of people will still be required of course, just in a different way with as much risk as possible placed on machines. This transition is the biggest opportunity for UK Defence Industrial champions to lead in building new equipment mixes, stealing a march on global competition.

Eighth, there are some important ethical and legal considerations that need to be at the heart of a 21st century Defence Industrial Policy. Some of this is not new, such as where limits are to be set on equipment exports. Some of it is new, such as how to handle the developing prominence of lethal autonomous weapons systems, whether these exist primarily in the hands of opponents, are reserved for self-defence purposes only, or become a more routine part of the military inventory. UK policy will have to go further than just regretting or denying the existence of technology that is open to exploitation worldwide.

In summary, if the UK can launch a coherent Digital Age Defence Industrial Policy as part of the Integrated Review the potential prizes are very substantial. It will chart the path to restoring effectiveness and efficiency in defence and security. It will transition industries and the constituencies that support them from clinging to the tail end of conventional, industrial age capability to setting the pace globally in the application of new technology. This will bring greater security and also influence with friends and opponents alike. It will promote skilled jobs sustainably linked to the Armed Forces and to substantial export prospects. None of this will happen unless government provides the leadership and incentives to draw together all those who have something to contribute, but industry and others can at least now help get the ball rolling.

24th June 2020

WEAPONISING THE NERDS: ARTIFICIAL INTELLIGENCE FOR UK INTELLIGENCE AND POLICYMAKING

There are 58 million smartphone users in the UK and about 90% of households have some flavour of home computer. Perhaps only 10% of the population is not assisted by the Artificial Intelligence (AI) that brings most of us our information from Facebook and Google, our stuff from Amazon or eBay, our telly from Netflix, and the unfiltered opinion of anybody with thumbs from Twitter. These are amongst the wonders of having 100,000 times more computing power in our pocket in 2020 than landed man on the moon in 1969. Another wonder is that everybody who does carry a smartphone is a sensor, taking photographs, registering movement and location, recording contacts and purchases, and communicating facts and opinion – inexorably contributing to the 4.4 Zettabytes (a Zettabyte is 1 with 21 noughts after it bytes) of data so far that is piling up around the world.

The internet is not all pictures of cats, although there are 85 million cat videos on YouTube alone, and only 4% of the web is pornography. With 1.75 billion websites and counting, the internet is a store of information so large and growing so fast that no one person could ever sort through it for a vital nugget. AI can do that. The internet is only really useful when AI manages it for us. So AI is truly vital to getting the intelligence needed by governments and armed forces and to making policy. It must be time we worked how to do this well and got on with it.

Intelligence is conventionally grounded in a well-refined, analogue way of working in which trained analysts build expertise in particular subjects, providing general insight and answering questions. When faced with a new situation or a specific question an analyst will design a collection plan to try and answer it. This may rely heavily on the three traditional secret intelligence sources of: communications intelligence (listening to telephone conversations or remotely poking about unobserved in computers); human intelligence (just chatting to people who know or persuading others to reveal or steal what they should not); and image intelligence (what can be ‘photographed’ from the sky or space with cameras, lasers and radars).

A good analyst will invest in a network of fellow experts and be an assiduous reader of what is freely written and disseminated. We already have ever-better software to catalogue and connect pieces of information, greatly stimulated by the need to uncover, understand and target well-concealed cellular terrorist networks, especially since 9/11. This system leads to the writing of erudite reports, peer-reviewed material - perhaps with some images attached. And whilst all of this is going on, the Minister in her office and the General in the field still get first sight of an event and the first explanations from the TV, and still Google the internet from their phones for more, quicker (and unverified) information.

The case for transforming support to intelligence and policy making around Digital Age capability is clear: there is so much more data to be found via the internet and other sources than closed government systems can ever deliver. Not only so much more, but also in many cases both available and useful in real time. If you want to know what is happening on Regent Street you could ask someone to go and take a photograph and write a report, ring up some shopkeepers, ask Transport for London (TfL), and fly an aircraft over it. Or you could tap into the picture of every mobile phone on the street in real time, the data from TfL that shows bus information in real time, the street CCTV that shows the street right now and could be linked to facial recognition, the private security CCTV in each shop, and maybe footage at 2m resolution from a commercial low Earth orbit satellite that is passing overhead. This data is created all day every day, so when routinely collected and fused by AI over a period it will reveal patterns that are instructive and predictive, making it possible to detect the unusual as it happens.

We need to convert the business of intelligence and policymaking from reliance on the closed, secret government-owned systems to an intelligence system that operates more like a newsroom. This is a capability that constantly monitors what is going on in relevant parts of the world through the mass of open-source information and pushes this awareness to decision-makers in an intuitively useful and convenient way (such as to their phone) - as well as answers their questions. Doing this well requires access to as much data and in real time as possible; the technical capability to collect, fuse, analyse, and present much of it automatically and without human intervention; the visualisation, modelling and simulation to display and

interrogate the information; and the secure networks to convey intelligence and information to users.

Almost none of this removes entirely the need for some humans to own and direct the system, to make judgements about its product and to decide what to do. Machines will remove quite a lot of human labour currently involved in collecting, collating and presenting data, but they will not replace the intuition, creativity, and capacity for lateral thinking of a skilled analyst, policymaker, or minister.

Not much of this transformation process in government will mean breaking entirely new ground because the technology in whole or in part is already well established in other sectors. Artificial intelligence is led by the major information technology companies as the key to their commercial success. This is how 3.5 billion Google searches a day are turned into individually targeted advertisements for 4.4 billion internet users in hundreds of languages, and why Amazon spends \$22bn on R&D each year.

Cloud technology is led by companies such as Amazon, Google, Facebook, HP, and Oracle, as (so far) only companies of this size are able to offer large customers (including the CIA and US DOD) scalability, access to constant innovation, and layers of security. It does seem likely, however, that sensible concerns about where data travels and where it is stored will lead to a preference for sovereign data storage in some cases, so that governments are sure that sensitive information only passes along limited and secure pathways to a place they control. The UK Government already has a clear policy encouraging the adoption of Cloud technology, but some degree of UK-based Cloud architecture for government is likely to be necessary, perhaps spurred on by the international chill created by the COVID-19 pandemic.

In adopting AI, the challenge for UK intelligence providers and policymakers is to recast themselves around technologies they have never had and do not lead in, by working with technology experts some of whom don't think or care much about government. Innovation in cloud, processing power, AI, simulation etc., is coming from a mix of very big companies, small and medium-sized enterprises, and universities. Most of the engineers leading

the way are youthful, many also subscribe to a technocratic, liberal and individualistic culture that is rarely interested in public policy and certainly not defence and security matters – even sometimes prejudiced against it. Google withdrew from the US DoD's AI Project Maven (worth only \$10m) in June 2018 as a result of employee pressure.

Yet the very worst approach now would be to try and retrain civil servants or military personnel to become competitive in building their own bijou cloud, algorithms and models. There are some very good experts in Government science posts, in Dstl and GCHQ, but relying on reskilling beyond these would be like trying to build a jet fighter in a garden shed with instructions found on the internet and parts sourced at B&Q. Better answers are already functioning in the private sector.

The level of technological understanding amongst non-technical officials who will need to lead this transformation is patchy, as it is in many other long-standing institutions, and not helped by the way Whitehall generally does less well at pan-Department coordination than it does when working inside clear Departmental boundaries. Data is still sometimes seen as something best managed by keeping one's own supply secure and isolated. This has led to Departments having exclusive data sources and bespoke visualisations - and therefore competing sets of situational understanding and conclusions. Instead of one big, build once and use many times government data store we still have many little data compartments scattered up and down Whitehall, even if these too are actually stored in a cloud somewhere rather than on a server under the stairs.

The power of AI is only unlocked by accessing as much data from as many sources as possible: new insights and options can be drawn by AI examining far more data than a human could possibly stomach to detect hitherto unfathomable correlations and connections. This is why China, with access to the data arising from the thoughts and habits of 1.4bn people, can find immense commercial opportunity and understanding in a way that countries of just a few 10s of millions and more restrictive data laws cannot. Similarly, there can be too much focus on algorithms and too little on the data these algorithms explore. A brilliant algorithm working on an egg cup's worth of data is not progress. But algorithms

are also not straightforward: they inevitably reflect the bias of the authors and their usage, so different algorithms applied to the same data sets will usually lead to different conclusions. Should intelligence and policymaking be supported by algorithms that match the inclinations of the officials who employ them, or be carefully selected to balance them, or should there just be a way of exposing the differences?

How can the best private sector expertise be drawn into supporting intelligence and policy? It means aligning the public servants (who understand the problems they need to solve and have immense subject matter expertise but limited capability in digital tech), with technology and technologists (who can innovate and develop at great pace and originality, but often have little feel for specific subjects). The conversation between them is much more about breathtaking application than breathtaking innovation. This conversation needs to avoid being either only with the big, conventional suppliers in suits or only with small companies dressed for the beach. Major, established players have highly skilled and well organised technical expertise and deeper pockets, smaller players provide different sorts of creativity and innovation. Both have a role to play in new and more agile capability and service delivery formats based on enduring collaboration.

What options are there for organising this collaboration? It would be possible for HMG to buy a suitable firm or hire talented individuals and make them public servants (on a special pay scale no doubt) but ownership in this way will be expensive, limit scalability and exclude access to wider innovation. More likely models include either buying capability in as a contracted service or forming a joint venture. Both models will have some challenges in common.

First, who owns and benefits from the IPR that a combined effort will develop? The government side brings its understanding, its definition of the problems to be addressed, and leads on the conclusions to be drawn; industry brings access to wider data sources, algorithms to choose from and the ability to refine them. After a period, once data sources have been better sourced and structured and the algorithms have ‘learned’ to the point where they are uniquely identifying features, patterns, and

anomalies and recommending better options, a very valuable capability will have been created.

This is valuable both in terms of its exportability to other users (public and private) and valuable as an intelligence target for hostile actors. Should the commercial partner be allowed to take what has been created and sell it elsewhere, and if so, should HMG also see a financial return – or expect the service it receives to be free or at least heavily discounted as a quid pro quo? Industry will bid for this work for the return to shareholders and officials will judge value by effectiveness and efficiency – and both parties have an interest in making a partnership work.

Second, how is the security and cyber resilience of such an arrangement to be assured? Will all the technical engineers who build the applications that are brought in from the private sector have to be vetted to an enhanced level? The time and cost considerations will be substantial, and many of the engineers needed may resent the intrusion. It is equally important to be sure about the integrity of: the data that is sourced; where it is stored; the AI that manages it; the outputs that occur; and the distribution of that output. Any hostile power will certainly be interested in fiddling with data sources, interfering with what is done with it, and seeing what the results are.

There does seem to be no alternative to more private sector expertise becoming formally vetted, which of course already happens now with many defence and intelligence contractors. Yet if a great deal of data is open source and freely available, at least some of the support can be done ‘outside the wire’ and drawn up into higher levels of classification on a one-way journey. This needs a more thoughtful approach to digital security risk management than a one-size fits all model can confer.

What would a model for bringing AI into intelligence and policy making look like? Here are some broad conclusions:

- It requires commitment to a transformative, disruptive process that over time puts data and digital technology at the heart of intelligence and policymaking, building new organisation and method around it. This will bring the pains of dislocation as well as the joys of revelation.

- This can only be done with the secure cloud, AI, visualisation, and networks capable of exploiting the vastness of data that is mostly connected to the internet. This needs private sector expertise.
- It requires government to partner with commercial technology providers in a committed, collaborative arrangements with well-defined terms for sharing benefits and accrued value. It cannot be a distanced, transactional arrangement.
- Information security and cyber resilience will be a core requirement, based on an intelligent and agile risk management approach.
- There must be a structured approach to the education and training of officials (and politicians) to understand the potential of AI for their work so they can partner better and make maximum use of the power about to be put at their disposal.

HMG could do none of this, leaving the exploitation of data in a data-centric world to others, but then explain to us how this makes us safer, more prosperous and better governed?

30th June 2020

LEADERSHIP & FOLLOWERSHIP IN TURBULENT TIMES

Most citizens of the United Kingdom must know that we are living in difficult times. It is conceivable one or two have deployed the skill or luck to avoid any contact with the (unfinished) Brexit bloodletting, but as COVID-19 bundled us into house arrest and a 2m personal moat, that surely has registered? These are just the most visible signs 'du jour' of how the 21st century is proving so much more awkward than we expected.

Although we like to take our national troubles one at a time, the truth is we must get better at managing a 'concurrency of woe', each one bringing great disadvantage, together perhaps amounting to calamity, and none safe to be ignored. Our lives will be shaped by the rise of China, disagreeable Russia, a planet unsustainably battered by global population growth and climate change, US stumble and isolationism, and the 4th Industrial Revolution - all of these marching at us together and at once. The withering of globalisation is one of the symptoms of a world ranked across the galaxy as 'a swimmer in difficulty', struggling against the currents of mass migration, the questions around why there are 2,095 billionaires and 3 billion people living on less than \$2.50 a day, and various flavours of violent extremism. Plus Brexit and COVID-19.

This is a world that will certainly demand some bravery and feel 'new', and it will require high quality political leadership and equally high-quality followership to navigate. Our recent performance indicates we need an epiphany on both counts. The way we have chosen to manage our affairs as a country for decades has been by historical standards comparatively gentle and broadly effective, but only a super-optimist could conclude a recipe built around the politics of marginal change and irresolute short-termism is good for what lies ahead.

It is very easy to take cheap, hindsight-infused shots around the handling of the pandemic, so here goes: we told ourselves such a thing was our number one risk, but we elected not to prepare for it; we delayed taking decisive action and so made the whole thing much worse; we despatched the elderly from hospitals to care homes without testing them and were

genuinely surprised this didn't turn out well; we kept our children out of school for five months, stuffing their education and keeping their parents from working despite the proven very modest risk; we spent £14bn a month on furlough and then clung on to the 2m rule to strangle transport and hospitality businesses anyway; we did so well at frightening ourselves to stay at home that many people need a crowbar to get back to work and the shops; and Google has 2.8m apps, with over 6,000 released every day... just not yet one for tracing in UK. If there is some truth in all of this low punching, it includes recognising that in conditions of novel and major peril, amplified by great uncertainty, we have to find new levels of competency and leadership as politicians and resilient followership as citizens.

It really is difficult for political leaders to *lead* the way through things that are just hard and unpleasant in conditions of considerable pressure and uncertainty. But it is the job they argued for. It is also really hard for citizens as they must be prepared to play their part in *following* when things that are hard and unpleasant in conditions of considerable pressure and uncertainty. But it is their responsibility, the obligation side of the equation that confers great freedoms and benefits on us all. So if, as seems overwhelmingly likely, the road ahead for UK will be strewn with multiple potentially existential risks then we must raise our collective game as leaders and followers.

Even were today's adult population of the UK happy to slide into becoming helpless victims of a cruel world (which seems doubtful), we should accept the imperative to set the conditions for our future generations not to be cut off at the knees by predictable harm. This is an important point not just because it feels commendably woke, but also because the inter-generational contract of the successive waves of betterment we have long assumed would apply forever has clearly been annulled. The children of today's 50-somethings do not see owning a home, going to university without a large debt, buying a car and going on holidays involving canvas-only as a matter of choice as all in range. This may be because interests change, but paying for all of this at once is hugely ambitious for many today in a way that was not for the wider middle classes of today's 70-somethings.

There are already really fundamental questions for UK around balancing supply and demand in an affordable NHS; raising 4 million children from

poverty; paying for the care of 8.8 million over 70s; the immense risks of a severely depleted and obsolescent provision for defence and security; how to educate our children in the intellectual and social skills that will foster equal opportunity and prosperity in the Digital Age; a looming crisis in electricity supply; getting rid of gas heating now we have almost finished laying the mains; a creaking railway system; whether to extend the busiest airport in the country over its busiest stretch of motorway; filling 500,000 potholes; and so forth – we all have our own list.

If today already has many challenges (and life for many in UK really is still pretty good), where we are headed could be overwhelmingly adverse unless we plough the best furrow we can. This is not somebody else's fatigues, this is our job.

On leadership, we know what won't work because we have tried quite a lot of it. Leadership that is driven by focus group and poll appeasement, where the horizon is never more than a week away and strategy is consciously eschewed in favour of event-juggling may work of course, or it can feel like government by idiot-grade crisis management of self-inflicted surprise. Based on how the landscape looks just ahead, there could be fewer moments when political leaders are gifted a choice of brilliant, new benefits to confer on a happily smiling citizenry and more when the demand is to decide between a broader, deeper selection of poor outcomes in order to alight on the least worst. And there will likely be more of these political one-legged ass-kicking contests the more we fail to drive ourselves to better.

We should expect to live in an age where the UK has to be well positioned and resilient for the future. This entails doing hard things now at the expense of our pockets, preferences and current consumption. How else can we ride the displacement of the 4th Industrial Revolution, the imperative to head off global warming before it heads us off, or maintain the consent to be governed amongst several million presently quite alienated citizens?

These kinds of dilemmas pose choices that require clear-sighted political leadership and citizens who accept the limits of our national ability to

heap benefits upon ourselves. A place in society will always impose substantial obligations on those who are able to discharge them.

We must be grateful that there are men and women who are prepared to submit themselves to the judgement of the ballot box and the ceaseless carping and abuse that comes with being an elected representative at any level. Our gratitude should be founded on the eternal truth that all political lives will end in failure because the scale and range of problems to be solved is beyond the power of one country or one person to triumph over, yet getting elected requires claiming it's all doable, now and for free. Even the greatest will to succeed is vulnerable to the dark lottery of a complex world: completely unwarranted catastrophe is omnipresent.

Are there aspects of political leadership that would seem to improve the chances of some success in this most trying of times? Having a sense of the Big Picture, grasping the width of the horizon the UK is facing is not a bad start. Without the Vision Thing, without a good sense of what the overall challenge is, working out what doing well against it would look like, and expressing this in the big, inspirational ideas of a core platform, then all the small actions and soundbites of the daily political rumpus have no context or compass. This is just not the same thing as political leadership by beating the citizen with announceables, these pellets of initiative that take their turn on a grid to convey concern and promise, yet without – when probed more in whining than in anger by the *Today* programme – coherent plans, the human and technical capability to deliver, or enough money.

If the core challenge facing the UK is in the combination of China, a faltering planet, and the 4th Industrial Revolution, no amount of tinkering with VAT, Universal Credit, and quarantine will provide the answer, even if all these things matter in their own way in the present. This suggests that we will need not just a better sense of vision, but also a better hand on the art and science of strategy to chart a forward course – and highly competent delivery led by our Civil Service.

This infers that holding political office will demand more education and training than simply a good eye for public sentiment and a strong Twitter

wrist. We expect our politicians to represent all the shades of interest and opinion expressed at the ballot box, and we need them to match that intuition with some of the leadership skills normally only found after the lengthy preparatory schooling to helm a large public or private sector institution. Perhaps because of the financial and personal pains of electioneering, the relatively modest remuneration, the poor provision of research assistance, the terrible office conditions, and the unlimited scope for public vilification we should not be surprised that our political leadership today attracts mainly only real enthusiasts. Enthusiasts who for the most part have been schooled only in being an enthusiast as they ascend from Intern to Special Adviser to Candidate to cannon-fodder backbencher etc.

Would it not be more in the national interest to provide better support to our elected representatives, perhaps a mix of (not really optional) education and training in the business of government, and much better support in things like research and office management?

These support and modest incentive arrangements may be less important to the quality of political leadership we shall need than the expectations we set around character and behaviour. This is not so much about standard 'hygiene' measures around corruption, bullying, and respectful personal conduct, these really should not have to be spelt out. The greater issue is about the incentives that make people want to serve as politicians and how they should expect to be valued. What we need are leaders who accept the impossibility of succeeding in all things at all times, omniscience and omnipotence only really seem to work well in religions and North Korea.

Of course, we will need leaders with the moral courage to decide, to decide on time, and to be prepared to act in ways that increase the prospects of a better outcome for the country in inverse proportion to their own electoral prospects, and when they do this, they must be prepared to explain why. This means the degree of ruthlessness which we see mostly in the jostling for position being repeated in how policies and actions are articulated: there is no reasonable way to claim that battling the challenges we have to face will be pain-free for everyone.

So we should expect to be given the facts, set a value on honesty and resilient good humour and have no truck with being messaged and massaged with what is plainly sugar-coated bobbins. A recession, for example, means less wealth for everybody and fewer jobs. Uncertainty and complexity also mean that mistakes are to be expected and since this is so, pretending all is well, clinging to a bus that is plainly hurtling over a cliff and calling it a diversion, should be called out. There is more respect to be had, now and in the history books, by being truthful and honest with an adult electorate than in hoping to make it to the next election without being found out.

This adult electorate has its part to play too. We are emerging from a time when our life was so relatively secure and prosperous that it became easy to think that each of us could lead most of our lives free of harm and that when misfortune struck, the NHS, Social Security, the Bank of England or the justice system would ride to the rescue. This is of course a gross oversimplification, but we seem to have acquired a sense that we are free to live our lives as we want without let or hinderance until bad things occur, in which case it is the Government's job to fix it.

In much more challenging times, the balance of an adult life between contributor and benefiter is bound to change: those genuinely unable to support themselves will still require the support and dignity that a compassionate society confers, and those genuinely able and yet resolutely unwilling to play their part will find a cooler welcome.

Perhaps the first element of 'followership' in harder times will be education and training: education in what the deal as a citizen is, what common risks we all have to face up to, and how to respond in a crisis. There is nothing wrong with our spirit, look at how the vast majority have abided by lockdown restrictions, how many people come forward on the spot when tragedy, disaster or terror strikes, and how many hilarious short videos one medium-sized country can upload to social media in the middle of it all.

What is missing is a clearer set of expectations and some modest conditioning to lay the foundations for greater resilience. This is not an

argument for a stiff upper lip when being abused, beaten or robbed, our tolerance for that should be set at zero, but it is an argument for not calling the police when the Wi-Fi signal in the restaurant is down. Nor is it an argument for national military service, just perhaps for some formal education for school-leavers about what 'society' expects of us all. We might all agree that poverty is offensive in an affluent society, in a way that being caught in a thunderstorm without a hat is not.

Just as we all know disappointment and loss are not illegal and we are capable of bearing a share of it without the world falling apart, we also know that risk is not something that can be excised from human existence. To find our path in troubling times we need to do better at managing the risk that matters and not imagining that all risk can be inhibited, certainly not by legislation or regulation.

Perfectly sensible risk assessment rules in the wrong hands (that is, anybody with a clipboard minus a normal helping of common sense) can be a menace anyway, but what the future will require is a collective thought that whilst we should limit risk (don't make the floor wet) and manage it well if it occurs (mop it up and put a sign on it), sooner or later we all take a tumble and wherever possible we must just get up and get on.

There are enough people in truly great need to focus our efforts on. Perhaps accepting a greater degree of resilience and self-reliance could extend to moderating the demand we make on our NHS so it can remain free at the point of delivery, from small things like not piling into A&E without taking advice on the phone first, to big things like diet and exercise to stay trimmer and healthier for longer? As we have seen during the pandemic, genuine major national emergencies will reduce the scope for society remedying those ills we wilfully even if only gradually inflict on ourselves as free-thinking citizens.

Is there is a big prize in prospect here? If we ramped up the quality of political leadership that we demand and resource, at the same time as we adjusted what is expected of each of us as a citizen as we all traverse difficult times, surely that would enhance the odds of getting through in

reasonable shape? Even more than that, if we lit a fire under how we are led and how we follow, would we do a much better job at creating and seizing opportunities to be secure, prosperous and content on terms of our own making in a global competition. We should want to be runners in the race to the top of human existence, not the bottom.

7th July 2020

THE UNPLEASANTNESS OF DEATH BY ROBOT

I doubt many members of GSF have had the good fortune to watch *The Mandalorian*, the latest Star Wars spin-off, stimulating though it undoubtedly is. We would all then be familiar with IG-11, ‘the masculine-programmed IG-series assassin droid’ that despatches a very considerable number of hostile stormtroopers with enormous vim and aplomb. IG-11 is enabled by the integration of sensors, weapons, robotics, data, AI, a formidable on-board power source and a magic ammunition supply to operate at a pace, accuracy, precision, and resilience in combat that no human opponent can match. Its subsequent reprise (having finally been shot out of service) as a tea-bearing ‘nurse droid’ is a mark of endearing, frankly highly inefficient, algorithmic versatility. But the point is that the only technical elements missing in the real world from IG-11 are the power source and the magic ammo box. We are already living with the advent of ‘Lethal Autonomous Weapon Systems’ (LAWS) and we need to decide what we will tolerate and how to inhibit what we will not. LAWS are coming for us even if we choose not to have our own.

We cannot be surprised that the potential of new technologies is being exploited in new weapons, that would defy the entire history of human conflict - great ingenuity has always been shown in harnessing new means to threaten, inflict or defeat harm. Denial and regret have never been sufficient responses: what can be made will be and what has been made will not be dis-invented. Albert Einstein and Robert Oppenheimer both had regrets about the development of the nuclear weapons in which they were instrumental, Mikhail Kalashnikov grieved over the deaths his rifle has inflicted on so many, and Ethan Zuckerman knows he will be damned in perpetuity for writing the code for the original pop-up ad on the internet.

Today, the combined application of data (especially, but not only, in the cloud), processing power, the Artificial Intelligence that allows machines to ‘see’ and ‘hear’ their surroundings and respond accordingly, the connectivity that enables the ‘Internet of Things’ (everything that can be connected to the internet is connected), robotics, driverless car technology, nanotechnology and other forms of miniaturisation, battery improvements, solar power and new materials will all contribute to the potential for LAWS.

This is now, not years away: the robotic lawnmower that relentlessly trims the grass (though not yet at a level that delivers a Proper Stripe) could be the genesis of a machine that also executes that neighbour's cat for abluting on the carrots again, just by equipping it with some cheap sensors, a simple algorithm, and a small firearm. But as your own cat would then need a decent flak jacket, even this example shows where some wrinkles lie.

It is important to distinguish between 'uninhabited (woke)/unmanned (common parlance)' and 'autonomous.' The General Atomics MQ-9 Reaper is a hunter-killer Unmanned Aerial Vehicle with a range of 1200 miles, a maximum speed of 300mph, ceiling of 50,000 feet and flight endurance of 14 hours when fully loaded with sensors and a combination of 3800lbs of precision guided missiles and bombs. It costs around \$16m, compared to around \$100m for a F35 Joint Strike Fighter - although unlike F35 it cannot survive against big air defence systems. It is flown from anywhere on the planet by a crew of two, so one difference from a manned jet is that a Reaper pilot is sat in front of instruments in a comfy chair free of G-forces, in an air-conditioned cabin, sipping the beverage of choice with a full stomach and an empty bladder.

But a Reaper only takes life when the pilot decides. An autonomous Reaper would have all the same capabilities, but when it connected what it sensed with its programming it would fire a missile or drop a bomb without any human intervention at that point. So do advances in technology like voice and facial recognition and their connection to data storage, AI and weapons mean the human pilot can have the week off?

Weapons that kill without a human controlling the action, machines that once unleashed apply lethal force on the basis of programming with no further recourse or control, are already in use. At least 15 navies use the Phalanx Close In Weapon System (CIWS), a radar and computer-controlled gun that fires 4500 rounds of 20mm ammunition a minute to destroy approaching missiles. It can be set to fire automatically or invite a human operator to take that decision, but given the speed of an anti-ship missile (the latest shift at 4700kmh) it is most likely to be effective when 'set free'. The system is programmed to make some basic decisions about

‘friend or foe’, but in the circumstances these are necessarily rapid and do not involve a conversation.

We are generally content with the idea of defensive systems such as these: they destroy armed attack, protect our own lives and assets and operate in well-defined conditions with small capacity for collateral damage. They are cheap to use, a bullet costs around \$30 and about 100 are employed in most engagements – the incoming missile might be charged at \$500,000 and a CIWS is certainly cheaper in every sense than having an aircraft carrier sunk. The equation was a bit more complicated when these systems were dismounted ashore as the Centurion to protect bases such as the UK airfield in Basra in Iraq from rockets, artillery and mortars, because of the potential for spent rounds to cause collateral damage. Different ammunition that destructs at tracer burn-out range ameliorated that, though this works better over desert than Kensington.

At a slightly different level, Samsung built the SGR-A1 sentry gun for deployment in the Korean Demilitarised Zone, with integrated surveillance, tracking, firing and voice recognition. The military case for an autonomous sentry is that unlike a human counterpart this relentless machine doesn’t nod off, doodle or get distracted by sex or beer every 18 seconds, nor want uniforms, holidays, pay, quarters, medical care, or a pension. It doesn’t sneak chocolate into its ammunition pouches, it doesn’t need regular training or miss a shot by failing to release the safety catch in all the excitement.

An autonomous sentry also raises the ethics of machines killing people without a human pulling the trigger or sanctioning the firing: how would we know what happened, who judged a shot was necessary and on what grounds, who is in charge of the act and who is to be held accountable for the consequences? These challenges apply to fixed systems, and even more so if LAWS move independently at sea, on land, in the air and in space, killing in accordance with their programming on the basis of what they sense.

The prospect of these individual, conventional systems generally provokes a mix of horror and interest, usually in a tangle. For example, it would

be possible to build a LAWS for the specific purpose of aspects of urban combat: instead of sending a soldier or a dog as the first through the breach in a wall of a building full of hostile soldiers we could send a machine. The machine would be sent in programmed to send back video footage of what it 'saw', autonomously shoot at anything it recognised as carrying a weapon with the speed of decision and reaction of IG-11. It would not be invulnerable, but unlike the soldier and the dog it would not bleed or be mourned if destroyed. It just goes in a skip. However, there is every prospect that this machine would kill many people, and quite likely some that met the criteria of carrying a weapon even if they were at that moment minded to surrender.

The reaction of most people to this scenario is a deep-seated reaction that we should not build these machines, not because they are not really cricket, but because they open the Pandora's box of machines killing people 'out of control' and killing 'the wrong people'. On the other hand, if this means we are back to sending in people or dogs, how do you feel about it being your son or daughter instead, because it will be somebody's? And you are definitely not keen on it being your dog.

By far the greatest concern, and the greatest impetus behind the now mature efforts by many pressure groups such as the 'Stop the Killer Robots' campaign, is not just the ethical dimensions of localised use of LAWS but the prospects of elevation to Weapons of Mass Destruction. The Internet of Things will bring many benefits to our lives, even though the wow factor of what is technically possible will be moderated over time by what is actually useful. Few of us really need a lightbulb that causes our electric toothbrush to charge up if we yawn after 2200hrs. Most of us do not want our every bathroom word, snort and scratch captured for the entire internet to digest before sending us unction for an improved crevice management regime. The Internet of Things, however, will mean that a whole range of innocuous things could directed to cause us harm and a vast number of very dangerous things could be connected to the internet.

If every device of every type is connected, and our physical location is almost always known, certainly in more urban areas, the theoretical possibility exists of an opponent capturing control of domestic systems and

making them a danger to individuals and communities. This could be by cyber tools that indiscriminately cut or pollute water supplies, cause power outages or surges, or crash road and rail traffic control systems without warning or consideration of the consequences. It might be more local, such as filling your house with gas and igniting it with your toaster or capturing your car's computers to cause a high-speed accident. The malicious use of autonomous cyber tools or everyday items to unleash unpredictable, uncontrolled and unaccountable death and destruction could easily create as much harm as nuclear, biological or chemical weapons.

Easier to do, and worse in terms of consequences, would be to build millions and millions of small, lethal weapons, each with limited power and range but together a profoundly dangerous system and a highly disturbing development. These might be things like flying, cooperative micro-drones, or connected explosive floating devices programmed to target beaches, or tiny wheeled equivalents that could dominate an entire city with the risk of death or injury for a long time - especially if solar-powered. Weapons such as these would compete with small nuclear, chemical and biological weapons in their potential to cause indiscriminate harm to vast numbers of people.

It is the prospect for LAWS to become WMD that lies at the heart of the developing opposition to these weapons. They are also not immune to the problem of cyber resilience: if a state built such weapons, could it be certain that they would not be captured by cyberattack and turned against the wrong targets? And since these things are not a massive manufacturing challenge, we can assume that they will attract the interest of many flavours of well-resourced and resourceful violent extremism.

The problem, as with galloping surveillance technology, is that there is little public discourse about where this technology may take us, no consensus about what the limits should be, no means of enforcing a treaty or agreement that may be signed and should be universally abided by, and every likelihood that some of those who signed had no intention of actually complying. The UK has no intention of building LAWS, agreeing that they would violate International Humanitarian Law, but UK still opposed (with US and Russia) a move for legal regulation by the UN in March 2019. Part of

the problem is the absence of any common definition of what constitutes or should bound LAWS and there is the sensible need to avoid inhibiting how AI and autonomy can be safely useful in defence. Attempts so far to draw LAWS into conventional arms control regimes have foundered.

Even if the UK does not support or build its own LAWS, it will have to expect both that other states will, and leakage to non-state actors such as ISIS. It seems that just as the world tumbles into conditions of greater, more existential threat, technology will simultaneously open the door to new and potentially terrible weapons. We might be forgiven for finding this combination of risk and capability heading arm-in-arm down the same slippery slope disturbing, perhaps we will not be forgiven if we do nothing about it.

What might we do? The first thing will be to raise the debate from pressure group level to a wider civil society and political discourse. The easiest way of telling this story is likely to be to energise our best storytellers – the film and TV industry. This subject is so richly dystopian that the best way to raise the issues to wider society is through a thrilling story. *The Mandalorian* is a start – but the story needs to be based on science fact, not fiction, to get the traction needed. Perhaps IG-11 could appear outside the smoking ruins of 10 Downing Street, not just in another galaxy?

Greater awareness needs to provoke more than alarm, it should cause us to invest in knowing who in the world is developing what in order to set up our defensive physical and cyber measures and to judge what nature of international consensus or intervention is needed. The clever minds developing AI do not mean to spur the construction of LAWS, but neither did Albert Einstein ever mean to see a nuclear bomb exploded over Japan once a German atomic programme was stopped.

15th July 2020

THE INTEGRATED REVIEW OF SECURITY, DEFENCE, DEVELOPMENT, & FOREIGN POLICY: SEIZING CATASTROPHE FROM THE JAWS OF TRIUMPH

Just as it was about to get feverish, the UK's Integrated Review (IR) of Security, Defence, Development & Foreign Policy was suspended early in the struggle against COVID-19, once this particular self-inflicted surprise began to consume almost all political and official attention. It seemed for a while that it would be pushed off to early Spring 2021, when things ought to have calmed down and it could be aligned with a recession-centric Comprehensive Spending Review. That wheeze has now been set aside in favour of hurtling to major conclusions by early Autumn. With August very likely to be committed to exhausted, stale ministers and officials rejuvenating their wisdom and energy after a tough year so far, the IR clock is clearly running down fast.

Nobody outside Whitehall knows how this is going to turn out, and the present signs are that nobody in Whitehall is that sure either – although it is very clear the major decisions will be taken only in Downing Street and possibly as early as September.

This is by far the most vital moment for resetting our Defence and Security for over a generation. On the 'demand side', the strategic landscape is immensely darker and more challenging than the last 30 years ever presented. We are staring at China, Russia, Iran, North Korea and Trump v. Biden and wondering what this means.

The ways - technology and method - in which harm can be brought to the UK's homeland and vital interests abroad have clearly changed in ways we have just not kept abreast of and this trend is accelerating: the country can already be held in great jeopardy with which we cannot deal. We rely extensively on collective security arrangements and yet NATO is on furlough as a competitive military organisation and its most essential backer is conflicted about whether it even wants to stay in or not.

We have parted company with the EU, potentially a major global soft power force if only it could stop gazing at its navel, and we haven't raised

our national 'hybrid' game enough. COVID-19 has shown how brittle the veneer of civilisation is in the face of natural and man-made disaster, especially if our national resilience arrangements amplify the former with the latter. China is telling us our choice on Huawei and either 'doing the internet' its way or the US way will have big consequences beyond just cyber resilience.

On the 'supply side', the current defence programme is stuffed with big ticket items that are incomplete and already sliding into obsolescence – and unaffordable to the tune of at least £13bn over 10 years. And that is before the woeful condition of a lot of equipment, logistics, medical support, infrastructure and training that forms the legacy of decades of gradual hollowing out is tackled.

Our Armed Forces have some excellent people and some brilliant kit in the shop window, but as an institution ready to fight home or away in a state v. state conflict this is a frog that boiled and is now simmering gently towards evaporation. The world at large has exploited the power of the Digital Age, our National Security agencies have made some steps towards keeping up, especially in cyber, but this does not yet extend to mastering data in the cloud, AI, vast and complex synthetic environments or common connectivity at above secret level across government. The pandemic has been a sharp reminder that doing so really matters.

Our Foreign Office was so emasculated by cuts to staff, infrastructure and operating budgets over 10 years that it could not compete well enough for attention and influence against even medium-weight peers let alone major diplomatic forces. DFID, meanwhile, had so much development money (a very good thing) that there can hardly be a dancing troupe in Africa not fitted out with a change of sparkly frocks. The Government has already decided to reform a single organisation, placing all UK efforts abroad under the chairmanship of the Ambassador. It will take leadership and time, cultural change, education, money and discipline for this to advance from two cats fighting in a diplomatic bag to the coherent influence machine we need.

It is just not clear yet what kind of IR we are having, and perhaps this doesn't matter as it is still a work in progress. We should, however, recognise that all

the previous reviews in living memory have more or less failed. They tend to start with some excellent work from the intelligence agencies and the FCO to set out what the world is like now and will become. From this a list of risks and challenges is drawn up in a combination which looks daunting, unattractive and expensive. These risks are seized upon by different bands of single issue fanatics (SIF) to advance their particular enthusiasms in particular threats and capabilities (terrorism v. Russia, intelligence v. jets, cyber v. everything else).

Most powerful amongst the SIF is the Treasury, duty-bound to assert that our defence and security is defined only by what we absolutely must and can pay for once we have met the costs of everything else that really matters like health, social protection, education and roads. The Treasury hand is considerably strengthened by the way all these other areas matter more to citizens and are therefore much more interesting to politicians, in conditions where spending on putative current or future harm is not going to win as many votes as subsidised dining out. There is no SIF for statesmanship these days because we don't demand it.

In constructing the outcome to a Review, the rubber really hits the road in Defence in how the costs of people, equipment, support and activity are rammed into a costed programme. In recent reviews this process has been trumpeted at the start with liberal use of the words 'modernise', 'transform', 'global', and 'efficient'. The scope for actually transforming a comprehensively silted-up programme is then immediately removed by asserting what is off limits: the nuclear deterrent, the major capital programmes such as ships, submarines, and aircraft, especially where this is core of defence industrial policy and defence industrial policy is core to employment in parts of the Union beyond the Lentil Belt.

The next step to failure is to assert that it costs more to get out of huge, outmoded contracts than to see them through (which is no accident) and demand that all changes must be 'cost-neutral': new stuff is only possible by removing old stuff, most of which has just been ruled out of bounds. Bands of SIF then appear to assert the absoluteness of their thing: cyber magic conquers all, a brace of aircraft carriers to crush China, and the stealthy manned fast jets that are hugely expensive even in tiny handfuls,

and therefore definitely not to be risked anywhere dangerous. Meanwhile, the National Security Agencies, the FCO and the Cabinet Office look at the size of their budgets compared to the size of the MOD budget and conclude that their ambitions are satisfied by a small dip in Defence, especially as cyber is the Only Thing That Matters. (No one was cybered to death in Aleppo, that was all Russian artillery and airpower.)

If the defence programme is silted up and already unaffordable, if big ticket items are protected, if all changes are to be cost-neutral, if there is a backlog of misery in things like housing, and if there will be definitely be more money for cyber (and this really is essential), we should not be surprised that 'transformation' becomes 'cut'. This was obviously even harder in reviews such as in 2010 where cuts were the point anyway, but the general inflationary cost pressures in defence for people and kit mean the budget always has to increase just to stand still in capability terms.

The result over the past 25+ years at least has been a trend of hollowing out a bit more: lose people from all three Services but especially from the Army; reduce the range of equipment to be bought; delay equipment even if that adds cost; reduce equipment numbers; hollow out stocks and engineering support a bit more (taking parts from Ship A, deliberately 'breaking' it to allow Ship B to sail); cut training activity; and mend fewer boilers and bathrooms. When faced with this the Services bend to the cuts to keep a diminishing core alive for better times, asserting publicly and to their people that all is well. After 25 years of this, many officers really no longer realise what a skinny veneer is left to meet the scale and character of the threats they are expected to deter and defeat. And the goodwill of those serving and their families is taxed some more.

Once all these measures have been taken, there has still been a gap between the programme that is 'agreed' and the money that is allocated over the next three years, let alone for the long-term equipment programme, to the tune of billions. Some of this is marked down to be solved by 'efficiencies': ways will be found to squeeze the pips some more to close the gap. There is an Efficiency Paradox here: easy-to-inflict efficiencies are imposed, bureaucratic nonsenses like Brigadiers having to sign off on every travel request and official entertainment rationed to one glass of Chateau

Draincleaner. Fixing a broken shower is to be hailed as an institutional achievement and the heating is turned down, in fact everyone is sent home for at least three weeks at Christmas to get it down to almost nothing.

On the other hand, really significant efficiencies are let pass. Rationalising the defence estate is not pursued because there is no cash to fuel the new builds and movement costs, despite billions being at stake. The acquisition system proceeds with too little money chasing too many projects using (the original) Dreadnought era procedures, executed by people paid way less than their industrial counterparts in complex contractual negotiations worth billions.

The support to the Armed Forces that provides spares, repairs and refurbishment still operates immune to many of the ways of working that make big industries internationally lean and competitive – for want of the collective will and capacity to really invest in modernisation. There is no shortage of senior officers who can articulate what good looks like, and an absolute drought of any with the money to invest in it at scale and pace.

As we approach what may turn out to be the midway point in the IR there appear to be at least four separate IRs in play. First, the part of the No.10 Policy Unit that covers Defence and Security (could this be as many as three people?) knows what the outcome looks like and is presumably mapping that out for Mr. Cummings and the PM. This may indeed be truly coherent, comprehensive and transformative – plotting the most important change programme for over 100 years.

I do hope so, because the situation we face as a country, the state of our current capabilities, and the fleeting opportunities ripe for exploitation demand nothing less.

Or, is the Policy Unit about to seize on the wrong end of one or two interesting sticks and beat us to death with acquisition reform talk and some wibble about data and intelligence? Will the Policy Unit deliver us more than just digital trophy wives on the arm of blunt cuts to the Armed

Forces, and not the profound Digital Age transformation that is required and possible? We'll know in about three months.

The National Security Secretariat, under the National Security Advisor, also knows what the outcome looks like and is presumably hoping also to map that out for Mr. Cummings, the PM and Whitehall. The NSS view can be a prisoner of very solid careers spent managing CT and discretionary military interventions like Iraq and Afghanistan, with a deflection since 2014 into trialling the tokenism of limited airpower, SF and capacity building at a safe distance to address major issues like Syria and Libya without blood or treasure. The next dose of tokenism, sending a carrier and a destroyer or two with a handful of jets (mostly from the US) to assert our national manhood in Asia-Pacific, is already taking shape.

The NSS is generally pro-cyber and pro MOD paying for it all. Having been battered by the Government cluster around the pandemic it surely must also have national resilience, in its widest sense, firmly in mind as the thing to fix. We'll know in about three months.

As the NSS works out what the answer is, it will also be umpiring the summer shotgun wedding of the FCO and DFID; managing whatever happens next with COVID-19; and engaged in its own battle for turf and resources as No.10 reshapes central government in its own image. The National Security Advisor will change in September from the highly experienced and dominant force in defence and security of Mr. Sedwill, to Mr. Frost who is currently pretty busy on point for UK negotiating our exit terms from the EU following a mid-level career in diplomacy and a CEO role in whisky. Mr. Frost will become our first political appointee NSA as the IR reaches conclusions he will have to implement, but which on the balance of probabilities he will not have played much part in shaping.

The Treasury knows what the outcome looks like and is presumably mapping that out for Mr. Sunak. In its steely way it is shaking every Department by the throat to point out the fiscal realities of a 13% drop in GDP this year and the profound uncertainty about whether the future will be V, L or some trajectory in between. This is why right now the staff in every Department, but most of all in Defence, are hanging their

heads in despair as they work out what a large cut to their programmes would mean.

For Defence, this means closing the gap they already had between their programmes and their money before COVID-19 struck, measured in the hundreds of millions for each of the Navy, Army, Air Force and Strategic Command, and likely adding on top what perhaps at least 5% more off the programme would mean.

There is no way this sort of reduction can be met by turning down the heating and squeezing chip portions in the cookhouse. It means slicing manpower, typically 15-20,000 from the Army; cutting some expensive old kit out sooner than planned like the more vintage ships, helicopters, planes, and armoured vehicles; reducing the numbers of planned buys of new kit (like ships, helicopters, planes, and armoured vehicles) and delaying what's left; and deferring capital expenditure on things like basing, houses and infrastructure. It also means taking a knife to terms and conditions of service such as pay, pensions, and allowances, and accepting that redundancies are an extra cost that won't bring much of a saving for about three years.

In recent reviews, showing what these cuts would require (aka the 'shroud waving phase') has generally resulted in the real force of the combined military and political pain (nationally and as an alliance partners) leading to a short-term bung of cash and kicking the decision along to another review. But that was before COVID-19 tanked the economy.

In fact, working out what such cuts look like is not an entirely negative exercise, there are efficiency gains to be had if the pain is enough to break out of the Efficiency Paradox. Recession could actually unlock transformation.

There is great potential to rationalise Defence real estate by concentrating more functions on the bigger sites and shifting more around the country, freeing up other sites in locations that are suitable for housing. This can only be done by driving through painful change and funding the necessary rebuilds and movement costs – with industry in the tent.

It also made sense for the MOD to provide housing and single accommodation when most of the Armed Forces lived abroad, it makes very much less sense now the vast majority live permanently in UK. MOD housing has never gone totally well, as the litany of evidence about shameful accommodation repair and maintenance over decades testifies, despite the major new builds that have come with repatriation. As the UK is stuffed with local authorities and housing associations that do housing for a living, maybe the MOD could be relieved of its accommodation responsibilities?

Similarly, what about the size and shape of traditionally structured Service Headquarters, the balance between Regular and Reserve Forces, the transfer of more training into advanced synthetics, and new ways of working that do not accessorise even quite junior commanders with (expensive) supporting staff in ways unchanged for decades despite the advent of mobile phones and the computer. Could these and other measures be unlocked by the pressure of less 'old programme' money, but still money to prime a more sustainable future?

The scope for positivity is just as well as the fourth IR is being thoughtfully conducted by the senior leadership of the Armed Forces, the Intelligence Agencies and Departments – who know what a good outcome looks like and are hoping to get a listening-to and not just a lecture. Partly because they have persisted for so long in trying to hold last-century capability together, partly because they know they will fail if really tested in this hard new world, and partly because they have had a bit more time to think about what good really looks like, there are now some extremely forward-thinking propositions appearing.

These generally advance how combinations of Digital Age technology will restore the effectiveness of defence and security, including the modernisation of military hard power, the ability to mount effective hybrid campaigns that include a harmony of intelligence, data, cyber, diplomacy, development and the private sector, and the restoration of the country's physical, cyber and cognitive resilience. There are thoughts about how to use these advances to improve key alliances and to restore UK influence abroad. There are encouraging signs of UK industry sensing

the opportunity of building new capability for our Armed Forces that also has tangible global export potential.

These thoughts are for the most part being constructed ‘bottom-up’ by Departments, Services and Agencies, sometimes at odds with the DNA of the institutions they represent and certainly not as part of any HMG grand design for Defence and Security. They are also inevitably competitive, at least in part. None of these actors is immune from looking covetously over the fence at their neighbours to cast aspersions and mount raids. Competition is not a bad thing as it leads to choices, but it is a bad thing if these choices are driven by parochialism or poorly-umpired.

The new thinking is also banging into the fiscal hard core at the heart of all Departments which broadly insists: there already is a programme - which is already overspent, there is no political traction, direction or authority for changing course and certainly no appetite for any more money - so please just go back to showing what less means.

In the case of the Armed Forces, the CDS’ lexicon of needing to find ‘sunset’ capabilities to disengage from, ‘sunrise’ (Digital Age) capabilities to grow towards, and a way to manage a long, cold night in between, could be ambushed by how to deliver essential and transformative change at pace whilst being financially cut off at the knees. But the greatest challenge is that it is just not certain that anybody in the upper echelons of Government, in Parliament and Civil Society is interested in listening to these propositions or giving them the policy and fiscal priority in a crowded field that they demand.

We will know soon enough how all this turns out. We probably won’t know more than the autumn term headlines with any certainty for some time, because for all the reasons set out above, if big hands are waved over a small map to the sound of fresh trumpets in September, it will take maybe six months to prove these declarations are still unaffordable.

Maybe, though, we will be clearer about what our Government really thinks are the major risks we face and what the priorities must be in tackling them. Maybe there really will be a sense of a coherent transformative

policy, strategy and design that restores our defence and security, at a sustainably affordable price, in a way that wins the UK influence in the post-Brexit, post COVID-19 world, and establishes a new industrial policy that provides for UK needs and services a global export market. And maybe not. So much seems to depend on how a tiny number of people at the top of our Government, to whom fortune and sharp elbows have handed our defence and security amongst everything else, either do or do not choose to drive their IR in one way or another. The outcome will certainly be profound for us all, and as things stand now either profoundly good or profoundly poor.

22nd July 2020

THE COMPETENCE PREMIUM

It would take very rare generosity of spirit to commend entirely our present Government and Civil Service on the competence and decisiveness with which they have steered our country through the past few difficult months. That is not to underestimate the literally unique circumstances wrought by COVID-19, nor the unprecedented consequences seen already in education and about to be seen in economic recession. This is also all before the immediate consequences of Brexit are known – we accept there will be some more economic wounding in the short term. No one could argue this period was ever going to be easy.

On the other hand, governments elsewhere with the same COVID-19 challenges seem to have fared better. Are we missing something? This question matters as it is more likely than not that we must contend in future with not only pandemics but also a generally more challenging world. If our future is to be dominated by a highly charged trinity of the rise of China, the effects of population growth and climate change, and the fourth industrial revolution, our elected leaders and their staff will face a substantially different and harder task.

We should insist that we are governed by politicians and civil servants fully capable of rising to meet this new world order with vision, confidence, realism, skill etc. – that they are competent to lead, not a smiley concierge presiding over an avoidable apocalypse across our national life. But if we, the citizenry, want high competence to be non-discretionary and to hold our ministers and officials resolutely to account for this, then we will need to rethink how we educate, train and support our public servants. Leaving them to their own devices has been a mixed bag.

Fortunately, we have often been blessed and still are today, by very talented people choosing to enter public service as either politicians or officials. The fabric of government usually relies on the unstinting commitment and genuine brilliance of a very small cadre. Yet it is equally true that there are plenty of politicians and public servants who unknowingly (generally) frustrate the creation of good policy and

the execution of sound administration. We have created a bureaucracy that can be brilliant, but also can so diligently apply rules and ways of working that overwhelm, stun and occasionally fatally throttle the prospects for success.

If desirable outcomes are continually speared by elegant process, we will have a bleaker future than is necessary. For example, if a labyrinth of boards, committees and working groups are propelled by an all-consuming search for consensus within and between departments, it may mean that either nothing happens or whatever happens never rises above the disappointment of a lowest common denominator solution.

The challenge has certainly been amplified by the pressure from the budget cuts imposed in many areas of public service since 2008, creating spirited but doomed expeditions to traverse the valley of death between a noble stated objective and the money actually available to pay for it. Our diplomats, for example, have been so strapped for cash that the environment and hospitality that serve as principal tools of their trade have passed from canapé-rationing to a systemically embarrassing output for a medium-sized, developed G7 nation. Funding for projects and other activity that win influence (other than for the Development Aid run on well-resourced lines by the now defunct DFID) were reduced to gestures when compared to many peers and competitors. We need to do better than this.

We are also witnessing the struggle to apply Digital Age technology in public administration, where we expect see our Government to emulate in at least some degree the effectiveness and efficiency gains that have already accrued in other institutions and businesses.

The fracas around this year's school examination results has illustrated that there is some way to go in understanding how data and AI should support human decision-makers. It should certainly neither supplant nor bamboozle them. The difficulty since February to understand the spread and penetration of COVID-19 and then test, predict and measure the effects of various interventions illustrate where we have progress to make in data collection, analysis, modelling, simulation and distribution.

A by-product of the pandemic has also been to expose that we can't sustain access to highly classified information if we don't equip our public servants with the technology to handle that information anywhere other than the very office from which we have just banned them. Resetting competence now includes grasping the potential of Digital Age technology better and more quickly.

Refreshing the expectations we hold for our elected representatives and our Civil Service, so we have solid confidence in their competence to lead is through great turbulence raises some very thought-provoking issues to be confronted. Shouting at the radio over breakfast is a start but likely not sufficient. It will include insisting that the bill that comes with raising the bar must be paid. Building a well-selected, well-trained, well-resourced Parliament and Civil Service is foundational to the government we need, not a discretionary overhead. The habit of reducing the *quality* of government as part of cutting programme costs has run its useful course.

This debate will also require us to accept that if we task our leadership to take hard decisions, some of these decisions will smack into the limits of how much our national and private lives can be well-cushioned by somebody else's money. Hard decisions may indeed be better in aggregate for a majority, but they also will bring difficulties and unhappiness to a minority.

We can see already, for example, the inevitability of the better-off paying more tax and rebalancing wealth from the grey end of the population to their children - prior to as well as on death. Right now, we appear to be stuck with a system of government that struggles to set out challenges that have bad news attached in an honest and principled way, because if they do so they get a kicking in the polls and the ballot box.

Yet we know it is just not possible for we the taxpayer to service every single wish of we the citizen to be eased through all the vicissitudes of life. So if we demand more competent government, the pact will include demanding hard truths and difficult options are spelled out to us, and tough decisions well implemented with less whining from the less well

benefited. Our politicians need to know they win points being candid, deploying integrity and rigour, we don't want to be just stroked like a grumpy cat.

We certainly realise we have made some curious choices that require some thought. For example, should we be disappointed that in 21st-century Britain, 2.5m children¹ are 'food insecure', where a child now goes hungry just down the road from a man who gets £10 off his Wednesday curry in August? How do we feel about easing small businesses out of our high streets because of the business rates we impose, unless they sell frothy coffee or recycle our junk?

We also know that we are doing this in step with the tiny tax burden we place on the online monopolies from whom we buy most of our stuff and to whom we give most of our data for free. We will need to support government at national and local level to place this sort of thing in our faces, regularly raising our gaze above the weeds of masks yes/no/maybe.

Competent leadership means being clear about the problem to be addressed, creating a realistic, affordable vision and strategy to deal with it, communicating this honestly and in good time, and making sure that execution happens well. Much easier to say than to do, and but still not impossible, but there must now be more points for propelling a national discourse on big, hard questions, and fewer for playing Trivial Pursuit well.

For both our politicians and our officials, recognising that we start with a mix of talents, how might we spur change? Perhaps to do a better job of matching the capability of our public servants to the authority that we confer on them we should restore a due sense of elitism? This is not about drawing exclusively from any particular strata of society, and certainly not from a narrow band of educational establishments, but it is about creating something of a pedestal for the people who lead our public administration. We need them to be amongst the most talented

¹ According to UNICEF in April 2019.

in our society. This means *selection* on the basis of potential and then *education and training* over a career to develop potential into proven performance and to filter for promotion to higher grades. We need our public servants to be Premier League not Pub League, and to admire them as much.

This applies to politics as much as administration. We surely have exhausted the benefits of whirling ministers and civil servants through short-term appointments, agnostic about their experience or competence for a particular field? Our national performance has suffered where leadership is primarily a personal voyage of discovery – a discovery that too often includes being a bit rubbish at a particular role without individual consequences, but many other poor consequences.

There have been attempts to invest in more education and training for politicians and civilian officials around defence and security in recent years. To some degree this has recognised the disparity that exists between the investment the military makes when compared to their civilian counterparts in what is an increasingly broad and common field of endeavour. A military officer could well spend six months as a major, a year as a lieutenant colonel, and four months as a brigadier to make his or her way on the Jedi fast track towards 2-star promotion. A civilian counterpart probably gets some specific skills training in areas like finance, but otherwise is left to learning by doing – for good or ill. Military officers are also going to remain within their broad field, so an expert in commanding warships is never sent to master the administration of modern agriculture. No wonder so many high-grade civil servants sent to MOD endure three years of bewilderment before securing an escape tunnel back to something they really have mastered, three years being enough of an outsider to find the MOD is mad and byzantine, but not enough to change it.

It is, rightly, something of an article of faith that anyone should be able to stand for Parliament to represent their constituency. This is a healthy thing, but it is no guarantee that those who do stand are any good at leading in policy or overseeing efficient and effective execution in complex affairs. Without losing in any way the essential political intuition needed in Parliament, it should be possible to provide – at public expense – structured

education and training for our elected representatives. Aspirant ministers need to know how to succeed in high office just as much as aspirant Permanent Secretaries, both in the general terms of how these roles work and in sector-specific expertise. Just as the Armed Forces found clear limits in how much to expect of a gifted amateur leading in battle, so too we witness in the business of governing.

The difficulty of establishing civilian education and training even in diplomacy, defence and security has been considerably amplified by the miserable resourcing of the institutions trying to accomplish it. The Foreign & Commonwealth Office has a Diplomatic Academy, but it is a largely virtual entity with a tiny staff and threadbare infrastructure. This is not the way to signal that investing in learning is core to career development. An elite will need building through high quality, challenging education by inspirational figures who set personal examples of great achievement. This is not beyond our capabilities to establish.

A more assertive approach to competence will require that performance in a post and in education and training is *objectively assessed* and part of selection for more senior positions. This seems to alarm people: the idea that simply attending a course is enough may be Standard British Comfortable but it is just not effective enough.

There are parallels here with the military experience, where grading to get selected for and whilst attending Staff College is a factor in the selection for subsequent employment in the more demanding posts and relevant to the pace of career progression. Does this lead to some regrettable behaviour? Yes, it does: there are a few sights more distressing than a born-again military shit in full careerist mode at Staff College, a mode usually initiated by their partner pointing out the limited joys of spending the next 20 years as a major. On the other hand, grading performance does mean that most people lean forward into their work and what you see is a reasonable exposure of their talents, certainly more useful than proof of capacity to dawdle through a thoroughly pleasant syllabus.

Improving competence will mean confronting failure. The political record here is mixed, some ministers have resigned to take responsibility for

actions taken within their department that do not reflect on their own personal competence. This can mean losing talent, even if perhaps only briefly, we can ill-afford to part with. In other cases, ministers survive despite presiding over a complete cluster, even thriving as serial offenders gliding from post to post with impunity.

A rethink about accountability should be part of resetting the competence bar. We will certainly need to accept more readily that in order to encourage boldness and innovation our public servants, political and official, should be expected to take timely decisions without perfect consensus and experiment. When they do this, sometimes it won't work out well. Part of the price for progress will have to be our tolerance for honest mistakes and the bill that comes with it. On the other hand, a proven talent for disaster need not be retained indefinitely.

The present regime in our Civil Service makes it extraordinarily difficult to remove people from a post or from the Service except for the most egregious offences, generally linked to personal conduct rather than performance. In addition, the barriers to changing structures and roles are also substantial if they directly affect the personal interests of even junior officials. In an era of greater risk and opportunity, both manifesting at high tempo, we will need to lower these bars to securing results, flexibility and adaptiveness.

The comparison with the private sector and its harder-nosed approach to changing organisations and to removing people - even highly capable people - because they are no longer needed is now stark.

It is unlikely that we can continue with Civil Service arrangements that struggle quite so much to fire people who repeatedly fail or inhibits the pace and manner in which it is organised. Change is normal, not a demon. An element of this will be to accelerate how easy it is to traverse between private and public sector at all levels, with inflow to public service supported by thorough induction, security vetting and training. The costs of this two-way street are marginal when compared to the risks and opportunities of a public sector of some £770bn per annum, the benefits are potentially significant.

This autumn is likely to see some tests for how competence can be raised in the Civil Service. The Integrated Review is expected to consider the creation of a capable National Security Academy. There are clearly moves underway to change how No.10 and the Cabinet Office are organised and operate. A bit further ahead, surely the refurbishment of the Palace of Westminster is an opportunity to re-examine how the Mother of Parliaments works, a Mother currently showing many signs of being wearied by age? We should encourage any steps that look like they will genuinely enable our politicians and officials to lead us better, for we will certainly need them to do just this.

8th September 2020

A NEW MODEL ARMY FOR THE 21ST CENTURY

The UK Government's Integrated Review of Security, Defence, Development, and Foreign policy now in the crescendo phase has some spirited discussion about the future roles and equipment of the Royal Navy, Army, and Air Force. As usual, the spectrum of debate spans from we need none of these anymore (as the world has sensibly grown out of any urge to fight) across to strident demands for the more, bigger and busier armed forces needed to stave off foreign powers visiting great evil upon us. In the middle ground the struggle to balance the nation's books in a deep recession, at a time when Defence is polling below 'don't know' levels of national concern, is competing with the news that state v. state conflict back in fashion and the UK is just not properly dressed for it.

The Army is particularly caught in the crosshairs, buffeted by a confluence of factors. It cannot continue as it is, yet what it needs to be is not clear - and certainly not yet provided for in the Defence budget. There are stentorian voices (in ties and brogues, highly polished) protecting long-established and honourably cherished organisations and their traditional equipment, and squeaky others (in shirts without collars and colourful sporting footwear) claiming the future for bytes not bayonets. This is not just a UK debate; the same discussion is occurring in many European and other countries. If the UK can find the way, there is a market to be had in influencing allies and selling them new stuff that is Made in UK.

The starting point for the Review has to be principled recognition that the present core equipment of the British Army is in poor shape. The three main constituent elements of the 3rd (UK) Armoured Division promised to NATO (the Challenger 2 tank, the Warrior Infantry Fighting Vehicle, and the AS90 artillery gun) had all entered service by the early 1990s and have changed little since then. Few of us rely on cars that are 25 years old, certainly not to fight in with our lives at stake.

In comparison, the German and US tank equivalents have had four upgrades and, arguably far more important, Russia has stepped well ahead with its new T-14 Armata tank, as seen in Syria. There is important

detail to note: Challenger 2 has a rifled 120mm barrel which spins a shell accurately to beyond 2km, the T14 Armata has a smoothbore 125mm barrel that shoots faster and better with 32 rounds in the auto-loader of an unmanned turret and can launch a missile down the barrel that goes 5km. That could matter a lot.

The second point for honesty is that all the money needed to recapitalise the British Army's core equipment is not in the defence programme that entered the Review, which for very clear reasons is heavily committed to modernising the Royal Navy and the Royal Air Force. What money there is for the Army constitutes a useful but selective modernisation, including 589 of the new Ajax family of armoured vehicles, but far fewer upgraded Challenger tanks. The Army had 800 tanks at the end of the Cold War and now owns 227 of which only 148 are programmed for any upgrade. If the tank still is the dominant land platform there will not be that much dominating going on in future, but if it is no longer the vital thing to have, what should succeed it?

Part of the reason behind the Army's present 'capability holiday' is the way commitments turned out to be different for 20 years. The sequence of campaigns in the Balkans, Iraq and Afghanistan consumed quite a lot of money and almost all the leadership and acquisition bandwidth in order to provide things like heavily protected (from explosions, not tank shells) wheeled vehicles, body armour and more helicopters. The era of 'discretionary' interventions like these has passed, at least for now, and the equipment they required in such a rush is largely not relevant to dealing with the military capability of potential state-level opponents. Fighting ISIS and the Taliban is a very different job to being prepared to fight Russia. The Army now sees the stuff it had mastered for hard duty in Afghanistan being sold off as redundant, knowing that its core armoured warfare inventory is profoundly obsolescent as it returns to focusing on NATO work with Russia in mind.

The Army's challenge in the Review is about a lot more than just equipment. Since the end of the Cold War the Army, like the other Services, has not been required to exist in a state of more or less general readiness. In the absence of a sense of existential peril the Army has

been shifted on both policy and affordability grounds from (in 1990) almost all of it being ready to fight almost all the time, to a programme (from 1997) of *graduated readiness*. In 'graduated readiness' about a third is routinely brought to a high state of preparedness, another third is behind it training to take its place, and the remainder is doing a lot of PT and small jobs abroad. Iterative rounds of savings-driven hollowing out since 1997 means that the equipment, stocks, and training capacity to bring the whole Army to full readiness does not actually exist. The obsessive focus on regular Army manpower, currently and only nominally 82,000, tends to skip over this absence of anything like enough stuff to give to people if the whole Army is needed at once.

Along the path from the end of the Cold War to today the Army has lost the capacity to *mobilise* as a combined Regular and Reserve force. For understandable reasons the Army became focused by Iraq and Afghanistan on how many full-time regular personnel it required. It fell into the habit of dipping into its Volunteer Reserve for small handfuls of individuals to augment enduring deployment cycles. This broke the ability of the Reserves to deploy formed units for general mobilisation, emasculating the cadre of Volunteer Reserve officers who no longer found development through a hierarchy of field command opportunities and were limited to 'force generation' duties.

The short-lived attempt post 2010 to suggest to the Volunteer Reserve that they might spend a year in uniform with a 2-year gap received short shrift from employers, the Reserves and their families – planning for regular use of Volunteers at scale is not what a Volunteer Reserve is for, a national emergency is.

Today, the equipment to mobilise the Reserve as a whole doesn't exist, nor is there a national mobilisation plan, nor the means to protect the Army in the face of hostile action as it mobilises in the UK. We have had three decades of being able to assume that war is only ever an away match, one that starts when we are ready having deployed in safety to somebody else's country. This doesn't matter if there was no great prospect of general mobilisation, which is the case today, but it is still a major hostage to fortune if the capability to strike at UK clearly exists

(which it does now in the form of long-range precision missiles and cyberattack) and the world ahead is potentially so much bleaker.

So the future of the Army really is about so much more than tanks. We need to decide what we want an Army for, where we might need to use it, and what *capability* (defined as manpower, equipment, training and support) it will need to be competitive. The answers will include reconsidering the balance between Regular and Reserves, rethinking the requirement for mobilisation, and making sure that, if necessary, the army can be brought to readiness at home despite being attacked as it does so. The same dilemma applies to all our European allies.

In looking for the way forward it is tempting to latch onto a point of certainty, but if the point of certainty is what the Army needed to be in 1990 this is a temptation to be avoided at all costs. When the Cold War ended so the character of that confrontation was consigned to history. The war we thought we might have back then was about very large conventional forces manoeuvring and fighting for the control of territory in a way that traced its lineage back to the Second World War. Indeed, the Cold War was exhaustively rehearsed with the equipment that would have been ideal in 1944, plus nuclear weapons. The military challenge the UK faces today is very different in terms of the opposition's intent and the capability with which they may pursue it.

In the case of Russia and its confrontation with NATO, the ambition to seize large swathes of NATO territory has receded and been replaced by the risk that Russia could very quickly attack and hold limited areas which it considers vital to its interest and most likely populated by Russian speakers (even if they hold no particular candle for Mr. Putin). The smaller, better equipped and more rapidly deployable land forces that Russia now maintains are just not the same as the Third Shock Army that menaced across the Inner German Border from 1(BR) Corps in the Cold War.

As technology changes so too does the character of a modern army. Unlike during the Cold War, it is now virtually impossible to move and manoeuvre a large armoured force undetected to a 'Line of Departure'

by dawn, before sweeping down from a very large wood to strike the opponent's immobilised tank fleet in the flank - as was practised about once a fortnight 1947-1989 on the Hannover Plain.

Space-based surveillance and the ubiquity of many other sources of information mean that the modern battlefield is effectively transparent. This can be a shame as the extending range and enhancing precision of missiles and artillery means that once detected any large armoured force is very much easier to destroy, perhaps from hundreds of kilometres away. This was exactly the experience of the two Ukrainian Battalions in lightly armed vehicles that were found by Russian drones and destroyed by long-range Russian artillery in somewhere between five and 20 minutes. Just as horses were not ideal for charging at tanks in 1939, so tanks are not ideal for charging at missiles (short and long range) in 2020.

The trend towards greater range, precision and the use of unmanned and autonomous equipment is being propelled by the rapid advances of technology developed for civil purposes, such as 5G, the Internet of Things and driverless cars. The future for any Army's capability will be built on the potential of data in secure cloud, AI, powerful and secure networks, robotics and autonomy - as well as enough good, hard human soldiers.

The latter is an important point: seeing the way equipment will change is entirely congruent with the continuing need for outstanding people who know how to fight hard. For all that technology has changed and will change how any army is equipped and operates, it is still essential to maintain a clear eye on what lies at the heart of soldiers' business. The kit may be different, but where it is necessary to take physical hold of somewhere or to protect it from others intent on seizing it, the fight will still be brutal and feral. We have seen this in spades in all recent conflicts: the imperative to fight with shells, bullets, bayonets, grenades still very much alive - and with it the need to protect people with the right vehicles and personal equipment as they go about it. The question now is how to do that, not to ignore it, and not persist with having outstanding people who can fight hard being resolutely equipped with their parents' vehicles and weapons.

It is increasingly the case that the point of decision in state versus state conflict isn't primarily a battle for the control of wilderness, or even agricultural land, but much more likely to be about large urban or semi urban areas where most people live, where power and wealth reside. This is a trend that galloping urbanisation around the world will accentuate. Urban conflict is a quite different challenge for an army than romping relatively freely across a plain or desert. It requires far more people and firepower per square kilometre, and equipment that is suitable and sustainable in a complex urban setting.

The optimum formula for balancing firepower, mobility and protection that a tank encapsulates is likely to be different than 75 tons of Challenger 2 offers: probably a lighter but still armoured vehicle fleet, whether on wheels or tracks, and perhaps shorter barrelled for street fighting. An army optimised for sweeping across European farmland could be something of a disappointment if the core issue is to be able to fight in the urban sprawl of a large capital city.

Nonetheless, even after decades of trying, technology has not yet squared the ambition to field a new army with 'medium weight' equipment (say vehicles at 40 tons) so that it is fleeter and more useable, with the reality that such a vehicle is still easy prey for a heavy tank if caught out. So it may now be far more vulnerable and less dominant but the tank is still a big player. Having fewer is different to having none at all.

This points to the great danger in arguments about military reform of lurching to extremes or clinging to the magic of a new Silver Bullet. It seems to happen a lot in military history that a new weapon appears and is touted as the complete replacement for everything that has gone before. We see this in the arguments about Air Power in the 1930s, about the submarine since WW1, and today about the magic of drones and cyber.

What is really at issue is a change in the balance of capability rather than the total eclipse of anything. Drones, for example, are very easily shot down by an opponent with a modicum of modern air defence – it's just that the opposition in Iraq, Afghanistan, Libya and parts of Syria had none at all.

The point was made when Iran shot down a US Global Hawk drone (the size of a Boeing 737 and costing \$220m) in June 2019. Cyber warfare is now a daily part of how nations confront and conflict, yet played no part at all in the fight for Aleppo and is only supporting cast in the stand-off between Chinese carrier killing ballistic missiles and US aircraft carriers over access to the South China Sea. It is tempting, not least because it's cheaper, to assert that one particular new thing is now all that's required but the truth is almost invariably more nuanced. Failing to recognise the need to match a complex span of threats with an *intelligent* (not necessarily mirror image) *complex response* is dangerous.

Resolving this complexity in the Review requires acknowledging that organisations like an army have to do many different things, so they either have to be flexible enough to transition quickly between roles or - far more likely - they need to be able to do several different things at once. In the case the British Army of course it is important to settle what it is it will provide to NATO as the centrepiece of its capability. It must also be capable of contributing to other missions that really do matter.

One of the principal legacies of the difficult interventions in Iraq and Afghanistan is a clear understanding of the value of partnering with countries that face significant challenges from instability and terrorism which may bring harm to the UK if not dealt with. It is obviously much better and much cheaper to help allies deal with these challenges than to deploy the British Army there to do it ourselves. This is essentially the formula adopted, albeit in a fragmented way, in the UK contribution to removing ISIS from Syria.

The mantra of 'Train, Advise, Assist, and Accompany' is going to be a core feature of any future Army, not an aberration and quite likely to be the most significant part of its routine employment. Doing this well means deploying not just a few spirited young officers and some rations, but a systemic solution that fields intelligence, command and control, planning, fire support, logistics and medical capability. That sounds a lot, but it's still a lot less than taking the whole fight on and doesn't mean tanks. It does mean doing the whole job too: training, advising and assisting but not going out to accompany at the fight is very rarely

effective enough. Few wars are won by waving your partners off at the camp gate.

An aspect of partnering lies in making a more conspicuous contribution to UN peacekeeping roles, especially where leading edge equipment and expertise developed elsewhere in a highly demanding circumstances can be brought to deliver far more decisive effect in what can be unnecessarily protracted UN operations. The UK, still a P5 Member, can add significantly to its international stock and to aggregate global stability by allowing the Army (and other Services) to be more useable and used in this way. The contribution of only 250 reconnaissance troops to Mali is a good first step, but hardly decisive.

Drawing all this together what should be the framework for settling the future British – and indeed any other – Army? We should start with the roles that it is most likely to be required to fulfil.

Russia. Foremost amongst these we can be pretty confident will still be playing its part in deterring and, if necessary, defeating Russian assertiveness on the periphery of NATO. As described above, this will be an Army that needs to manage today's military capabilities and methods not yesteryears. This means resetting defence against air and missile attack, so it can mobilise at home, deploy to where needed, and fight when it gets there. It means having access to the surveillance and reconnaissance ability to see the battlefield at least as well as the opponent. It requires its own very long-range precision missiles to deal with enemies before they can strike. And it will still require a 21st century mix of networked manned, unmanned and autonomous mobile, armoured forces able to fight for terrain or to destroy an opposing force – and most likely in an urban setting. This is not Challenger 2, Warrior and AS90 as formed up in 1990, but nor is it without mobility, firepower and protection.

Readiness. How much of the Army do we want at readiness at once, and do we envision being able to guarantee having the whole thing got ready in reasonable time in a crisis? The answers to this will drive not just overall size but also fleet numbers, stocks and investment in resilience such as hardened infrastructure.

Intervention in a More Challenging World. We should also expect this new Army to be ready for essential military intervention outside NATO (with allies) to secure UK vital interests when in real jeopardy. These would be very different from the discretionary interventions of the last 20 years against the opposition that fielded such a very limited band of capability, albeit in some cases to sharp effect. So the future Army will need to be expeditionary-minded again, setting aside the widespread current aversion to thinking about this. Just because we grew weary in Afghanistan does not mean our future security and prosperity will not need protecting – or our values.

Capacity Building and Stability. Building capacity on an enduring basis with our partners around the world, so that they look after themselves better and in so doing buttress our own interests, will be a standing requirement. This needs to be manned, equipped, trained and sustained as a vital output and not some sort of distraction between turns in first division work. Fielding appropriate contingents to support the UN or other coalitions in order to make, keep or support peace and stability will also be important, and each will be different and will need to be calibrated as such in terms of capability, rules of engagement and longevity.

Resilience & Mobilisation. A different approach will be needed to resilience in the UK home base. This includes how the Army supports a national response to natural or man-made disaster, or to terrorism on the occasions when it slips the control of the police and security services. It will certainly involve resetting the capability to protect the UK from the risk of long-range precision conventional missile attack. As we restore the capability to protect our daily way of life from physical, digital and cognitive attack the Army will have a part to play.

People. This reordering will require a fresh approach to the mix of Regular, Reserve, Civil Service, industrial and robotic manpower. Any army should only have the full-time regular personnel that it needs to do things that are: required every day, deployed permanently abroad, so complex that they require full-time expertise, support mobilisation, or are needed at very high readiness. If something is only needed occasionally, or only needed at mass with reasonable notice, there is a very strong argument

for it being held in a rejuvenated Reserve force. Technology will enable this as more military equipment is immensely complicated in terms of its manufacture but also by design extremely easy to learn to use and to operate. For example, it seems unlikely that defending the UK against Air and Missile attack will be a very regular requirement – though when it's needed it will be needed to be done well – nor is it likely that our power stations and water supplies need guarding daily. These are the sort of task a modern Reserve should be given to do.

So the future of the British Army is so much more than about the future of tanks. If what is needed today is certainly not a Challenger 2 in the form or numbers needed in 1990, what is needed is still equipment that provides the necessary mobility, firepower and protection for contemporary settings. It may still walk like a duck and quack like a duck, but it has to be a different, better duck.

18th September 2020

A DEFENCE & SECURITY SCORECARD FOR THE INTEGRATED REVIEW

The UK Government's Integrated Review of Defence, Security, Development and Foreign Policy is well into the bipolar phase: every dog in the fight has submitted their thoughtful wish list and the Treasury has issued thumbscrews in return. There have been pulses of activity around this Review throughout 2020, pausing to manoeuvre around the all-consuming claims of COVID-19 and the unshakeable Whitehall coda that Nothing Happens in August. Nothing so far has looked like conclusiveness, but conclusions - at least some early and big ones - are surely coming based on the ramping up of trails, wails and leaks now appearing in our Press.

So here is one abbreviated checklist of what a good outcome for Defence and Security aspects could look like. It feels today like the UK has chosen, one way or another, to lie on the floor for a bit and look up at the world in a condition of unnecessary but multiple discombobulation. This is presumably not how we wish to remain indefinitely - and this Review is fundamental to raising ourselves to our feet again. One of the reasons for our national prostration is that the world is now being so disobliging in ways we have struggled to counter, so the checklist is about launching the essential transformation to be able to have our proper say in this new global context, extending our reach beyond desultory tinkering and whining.

Policy and Strategy for a Harder World. There are many indications in the public propositions set out by various actors in this Review so far that it really will register the neon-lit inflection point in the UK's security and prosperity flashing at us. This must be the Review that conclusively closes off the post-Cold War era and charts the course for the UK in a much more uncertain, challenging and risk-strewn world. It must set aside the comfortable assumption that our defence and security is guaranteed in perpetuity to be richly and resolutely led and paid for by the US as the single superpower. In acknowledging that the 21st century henceforth will be dominated by the rise of China as a dominant economic and military global force, and that this alters in ways we may want to influence but cannot control how a different 'Rules-Based International

Order’ is constructed and operates. The Review must define what the new China means for our sovereignty and security. The UK relies on a stable, sufficiently regulated world for so much of its food, energy and prosperity that isolation is not an option, and nor is wishing that the strategic context froze in 1990.

Previous Reviews have certainly acknowledged the shift back to the predominance of risk from state conflict relative to terrorism, but now it is necessary to recognise the potential for these risks to be existential rather than marginal. This includes nuclear weapons which have proliferated and are once again being described by some states as ‘tactical’ options.

The tussle for dominance between East and West will play out on a tableau significantly discoloured by the effects of global population growth and climate change. Divisions within and between states as a result of ecological and environmental trauma will very likely create profound instability and confrontation once people find that more reasonable alternatives no longer apply. This will be compounded by how the Fourth Industrial Revolution displaces millions from even long-standing employment and challenges entrenched social, cultural, and political norms that suddenly feel vulnerable. This is so much more of a complex, tough strategic conundrum than just wrestling with a resurgent Russia and a fractious European Union, but neither of those issues have gone away either.

So the Review must establish the policy framework by which the UK sustains its sovereignty, security and prosperity in a world where we will only have a modest say. It must accept that we live in a condition of permanent competition and confrontation, which will occasionally spill into conflict with very high stakes, and proceed from there. This is the Review that ditches defence and security built around the 20th century notion of peace or war. We need to know now how we will protect ourselves in this different setting. It will certainly include a revitalisation of our ‘collective security’ arrangements such as NATO, and NATO needs to deal with the wider emerging risks to the Alliance’s members as much as UK. The NATO that worked in the Cold War and cruised through lesser challenges in the Balkans, Iraq and Afghanistan now has to deal with

not only Russia and its new capabilities but also the potential for hard-edged intervention to become necessary again well beyond the Alliance boundary, because there is nobody else to turn to.

New Capability for a New World. This Review, like its recent predecessors, has to come to terms with the way technology and method in defence and security have already changed in ways that the UK has not matched, and will clearly need to change. If the debate sticks at only considering how to reconcile the current imbalance between the defence programme and the resources allocated to it (perhaps £13 billion short over 10 years), all it will do is tidy up and expedite the descent into exotic equipment tokenism and obsolescence. If the Review fails to equip intelligence agencies and government machinery with the digital tools and refreshed organisation and operating procedures to exploit it, then it will continue to fall short in meeting how harm is already projected at the UK, let alone what may happen next. This is the Review that charts how the UK modernises and transforms its defence and security through the thoughtful application of combinations of digital age technology and method, in order to be effective at an affordable price against 21st century risks.

The Triple Reset. As we are faced with new risks conveyed by new capabilities, the Review must reset our defence and security in three, integrated core pillars:

- **The restoration of *national resilience* against the effects of natural and man-made disaster; terrorism; sustained hybrid attack (including both cyber network/data intrusion and ‘cognitive assault’ on public will through systemic media manipulation); and the potential for physical, military attack employing weapons that are currently beyond our capabilities to match.**
- **The organisation, method, regulation and technology needed to fuse all the levers of national power into effective *hybrid campaigns* that influence the behaviour of competitors and opponents ill-disposed to the UK and to support our friends.**

- **The fundamental, transformational reset of *military power* so that it is capable of both protecting the UK homeland and of projecting force abroad (almost certainly in conjunction with allies and partners) in order to preserve or restore stability, avert humanitarian catastrophe, to deter, and to defeat threats that significantly jeopardise our security or prosperity.**

Resilience. COVID-19 is vividly illustrating to us all just how fragile our society and daily life are when risks arise to the sustainment of a complex web of infrastructure, services, government, commerce, communication and social activity. We have seen glimpses of this fragility before in floods, terrorism, industrial action, and disease – we just didn't take them seriously enough. We know we need to harden ourselves against a future that is very unlikely to be any more forgiving. The Review must create the capability that can keep the country safe, secure and basically functioning against all the potential forms of harm that have been well identified for some time. Specific measures are being well articulated in the submissions on the table:

- The development of the March 2018 fusion doctrine from an elegant statement of the problem to the establishment of the means to deal with it. This includes:
 - Equipping government as all levels (central, regional, and local) with a common 'digital backbone' comprising data in secure cloud, AI, resilient secure networks and a common National Synthetic Environment (a Digital Twin replicating in scale and complexity how the UK is functioning in near real time). This backbone will enable resilience through far enhanced situational awareness, decision support, planning, coordination, support, and training.
 - The rapid establishment of a well-resourced National Security Academy to educate and train civil servants and politicians in a common understanding and lexicon with which to approach their combined leadership of defence and security. Without building greater collective competence, progress will rely on learning by bruising.

- A national strategy for cyber resilience that spreads responsibility and accountability between government, situations, enterprises and citizens for the protection of national daily life. We can't all expect to ring up the National Cyber Security Centre when the lights go off, we all have a part to play and need to know what this is in advance, and to practise for it.
- The digital tools and associated education and training must be built to equip government to identify intrusions into our cognitive integrity and security through the manipulation of media, especially social media. It must be possible to identify where facts are being subverted and fake news disseminated, and where both are designed to mislead or destabilise civil society. This is also a challenge in which we all have a part to play in being resilient.
- A reset of national physical resilience to ensure continuity of government and daily life. This is likely to include the reprovision alternative, secure and hardened facilities and networks, a reappraisal of what stocks and material should be maintained as a contingency reserve, and education and training for politicians, officials and citizens so that we all know what to do and what is expected of us when a major crisis occurs.
- The restoration of the ability of the Armed Forces and other services to assure the integrity of the UK airspace, waters and territory. This is no longer about fending off an invasion fleet as in 1940, it is about building the potential to be able to intercept salvos of the long-range precision conventional ballistic and cruise missiles that already dominate conflicts between states and will do so even more with the advent of hypersonic weapons. In addition, for example, if we can't physically protect the undersea cables that connect our economy and society to our allies, or defend the vital infrastructure that keeps us powered, fed and communicating we will be entering choppy waters relying on just hope, pluck and improvisation.

Hybrid Influence & Campaigning Abroad. We know very well that there are states today committing considerable resources to stealing our intellectual property, undermining our political discourse and social stability, and capable of cutting our access to vital services. We have shown some capability in responding to some stark events, such as the Skripal poisoning, but we have a long way to go to build a ‘whole of society’ approach to how the UK influences the rest of the world, including some hard-bitten adversaries, in how to play nice. This is not about military power, though this clearly plays a supporting role in activities such as capacity building abroad and enabling other parts of government to act. Hybrid campaigning is about how we are able to integrate and apply not just *public sector* resources such as political, diplomatic, economic and development capacity, but also key aspects of the far more influential *private sector* such as law, banking, insurance, property, culture, and sport.

- The Review needs to articulate how our public sector advances from the present federated approach whereby Departments and Agencies cooperate in meeting a policy goal within the limits of forging a *de minimis* consensus around their individual views, to a NSC-mandated and supervised process by which a single government plan of campaign is enacted by Departments integrated into and conforming to a common design in which they deliver specified outcomes, with the freedom to decide how best to do it - but not whether to bother at all.
- The new Foreign, Commonwealth & Development Office needs to be resourced with the people and the activity funding to compete effectively abroad. This is a small bill to pay, dinners just can’t cost as much as ships, and essential to levelling the international playing field in hybrid campaigning.
- After a couple of false starts, this Review must also direct how the advancing to hybrid campaigning will be enabled by technology that is already freely available in the private sector. This means a secure data policy, the rapid adoption of AI to support not supplant officials educated in its use, and networks that enable work at different levels of classification are not tied to a desk.

- In proceeding from the fundamental policy parameter that the UK depends upon collective security arrangements given its geography and relative power, the Review needs to expedite how hybrid campaigning is also placed on a collective footing just as much as military security. This may partly be an issue for NATO, but as the Alliance is largely confined by its members to military hard power, it also means entering into arrangements with like-minded states around the world. It does mean finding the right way post-Brexit to cooperate with the European Union as one of the most potent owners of non-military power in the world. Geography still counts.

The Transformation of Military Power. The UK Chiefs of Staff have articulated how they well understand that much of the capability that they operate now and have in their forward programme traces a lineage to the conventional forces that emerged dominant at the end of the Second World War, and that this won't do in the 21st century. As technology changes the character of confrontation and conflict, as it always does, the Chiefs recognise the progressive obsolescence of such a formula, describing aspects of their current position as 'Sunset' capability. They say equally clearly that the future of their Services lies in rapid modernisation and transformation on the back of the potential of the Digital Age, and they have begun to set out what their 'Sunrise' capabilities look like. Sunset will help to pay for Sunrise, but still needs priming. The job of this Review is to cement the capability Sunrise into policy, money, programming, and acquisition, and it must also explain how we navigate the journey through the night. As it is clearly neither possible nor affordable to throw away the current inventory and just wait for the sun to come up, there must be a thoughtful way for how the current equipment and method are augmented, adapted, modernised and changed to become more useful and potent. The Review must establish the major handfuls of military change, including:

- The rapid creation of the digital backbone that will provide the foundational enabler for future military capability and operations. This Review will be the watershed at which military power is no longer built on metal platforms accessorised with communications and clever kit, but instead formed on a digital spine to which all

other things are attached. The digital backbone is a combination of data in secure (hyper)cloud; AI; Single Synthetic Environments that replicate a country, a theatre or an alliance; and secure networks that no longer strangle operations with archaic levels of bandwidth.

- Mastery of the ‘transparent battle space’, the ability to see far more clearly what any opponent is doing everywhere and to anticipate better what they will do next, through the fusion of as many (open) sources of data as possible with a layered, integrated network of military collection assets such as satellites, drones, radars etc. This fusion will rely on the secure cloud, AI, SSE, and networks of the digital backbone and the fullest connectivity to allies and partners. Information will be the lifeblood of interoperability.

- The rapid, thoughtful modernisation - accelerating to transformation - of the Royal Navy, the Army, and the Royal Air Force as they evolve swiftly from the present construct focused on tiny numbers of increasingly rare breed and irreplaceable manned platforms to dynamic combinations of manned, unmanned and autonomous capability. This will not simply replicate how present-day forces move, manoeuvre and fight, but meet the new requirement to be able to operate in the ‘transparent battle space’, always subject to the dominance of long-range precision conventional fires and pervasive cyber risk. As it incurs lower acquisition and sustainment costs and endows a reducing requirement for expensive regular manpower, this transformation is the route to restoring not just effectiveness but also affordable mass, resilience and deception.

- This is also how the UK restores its air and missile defence, it is how the UK and is able to deter and defeat state opponents in concert with Allies. It will create the means for decisive action at sea, on land, in the air, in space and in cyberspace, advancing from the doctrine of ‘jointery’ to reach 21st century ‘multi-domain integration’. All of this is ready in the thinking set out by the Chiefs of Staff, it just needs unlocking in the Review by political leadership and ownership and a credible resourcing model. Resourcing should

recognise that this route buys the capability the UK really needs at a much more sustainable price than the present unfulfilled and increasingly obsolescent analogue programme.

- The Review must reset what is required from the Armed Forces in terms of readiness and mobilisation. It may be possible to continue to rotate sections of the Armed Forces through a readiness cycle for as long as the threat conditions remain low enough, but it is once again essential to know how to bring all of it to readiness in a crisis. This presupposes that there will be a plan, stockpiles, and assured resilience from missile, ground and cyberattack in the homeland and abroad as mobilisation occurs. Implicit in this is a profound re-drawing of what the UK requires from its Volunteer Reserves and industry, as they surely take a bigger role in defending the UK when necessary and manning equipment that is rarely needed, or rarely needed in a hurry, but still essential when the call comes.
- In support of this transformation and partly to unlock the remaining sources of 'strategic' (that is to say in the £ billions) efficiencies, this is the Review that finally breaks into the reform of defence acquisition, training, logistics and infrastructure.
 - It is entirely specious to hope that merely reforming the acquisition organisation, the thing that does the shopping, will in itself result in the essential transformation of military power. Unless the Armed Forces are also led into Digital Age transformation, a better shopping organisation will only buy the wrong thing more often even if perhaps more cheaply. But the acquisition of Digital Age capability certainly requires a very different approach than the ways employed to buy nuclear submarines, aircraft carriers, and fast jets at leisurely pace and galloping prices. Enduring, flexible partnerships around software as a service will replace transactional relationships geared to long-run cyclical platform replacements, for example.
 - It has been argued for 20 years that simulation will replace a lot (but never all) of real world training. Real world training

is not only expensive in terms of fuel, ammunition, spares and logistics, it's also increasingly difficult to replicate the realities of modern combat on Salisbury Plain or in the Channel. Technology has now caught up with the aspiration, particularly through the availability of scale and complexity through cloud computing and experience from the global games industry. So this is the Review that establishes how 30% of real-world individual and collective training is transferred over time into applications in the same Single Synthetic Environment in the digital backbone that underpins operations. Not only is this going to be better, it will also save hundreds of millions of pounds, dollars and euros every year – money that can buy more and better capability.

- Similarly, the introduction of better data supporting centralised and leaner approaches to logistics, mirroring more closely how other large and complex commercial organisations sustain themselves, is overdue. The Armed Forces already have a sense in writing of how to do this, it now requires the politics to make it so and some money to seed it. The saving target should be set at around £1 billion a year.
- The defence estate – living, working and training – is widely acknowledged to be too large, too inefficient, too broken, and too obsolete in many areas, this is a major transformation target the Review should pick off. A programme of rationalisation that collocates as much as possible in premises fit for duty in the 21st century, including hardening against conventional missile and cyber-attack where necessary, will also release some good land for housing and other uses. Achieving this, and the long-term savings that it will unlock, will not be accomplished by instructing that the whole thing is done on a cost-neutral basis – certainly not in the early years, where investment in re-provision and movement will come at a cost.

Finally, the Review must articulate how this essential modernisation and transformation, the most significant for over 100 years, is linked to the

UK's recovery from the immediate effects of Brexit and the prosperity hit of COVID-19. It should be obvious that if the UK leads the way in the transformation of defence and security capability and method for the 21st century, then this will be of great interest to our friends as well as our opponents. By mandating in the Review how change will be accomplished well and at pace, it will create the substance for refreshing how the UK now plays leading part with our allies bilaterally and in alliances such as NATO. In addition, by adjusting UK defence and security industrial policy so that it leads the way in how new equipment and services are provided to the Armed Forces, it will quickly become the case that what is made for the UK will then be made in the UK for others who seize upon it. Unlike so much of the current inventory, there will be a global export market for Digital Age defence and security equipment and services, and the UK now has the opportunity to win first-mover advantage.

All of the above are propositions whose time has come and which the Review could enact if the Government chooses so to do. We should certainly know by Christmas what the result actually is, so we should all keep our fingers crossed that there will then be only one turkey on the table to consider.

30th September 2020

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General Sir Richard Barrons KCB CBE served as Commander Joint Forces Command, one of the six 'Chiefs of Staff' leading the UK Armed Forces until April 2016. He was responsible for 23,000 people worldwide and a budget of £4.3bn, delivering intelligence, Special Forces, operational command and control, all surveillance, reconnaissance and information systems and communications, operational logistics, medical support, and advanced education and training across the Armed Forces. An artillery officer, his military career included leadership from Captain to General on military operations in Bosnia, Kosovo, Northern Ireland, Iraq and Afghanistan – often as part of US-led coalitions and in NATO. He is President and Colonel Commandant of the Honourable Artillery Company, a Senior Associate Fellow at RUSI, and a Visiting Senior Fellow at LSE IDEAS. He is now Co-Chairman of Universal Defence & Security Solutions and his ambitions are to be at forefront of applying disruptive technology as it revolutionises business, society, government and defence, to find a leading part in addressing the causes of instability, tension and conflict in a rapidly changing world, and to contribute to the continuing evolution of defence and security thinking worldwide. He provides board-level geostrategic insight, advice and influence, and supports senior corporate leadership development programmes. He advises and lectures regularly on defence and security policy, cyber risk and security to City, academic, parliament, military and commercial fora. In promoting the rapid development of combinations of the digital age technologies in the 4th Industrial Revolution, he is developing the principles and major capability bets that should guide the transformation of Western defence in particular.



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 [@strategy_forum](https://twitter.com/strategy_forum)

events@globalstrategyforum.org

Global Strategy Forum
PO Box 74574
London SW1P 9UW

