

Air Power

Volume 15 Number 3 Autumn/Winter 2012

RPAS and the Ethical Landscape of Contemporary Conflict

Wing Commander Nicholas Tucker-Lowe

**The First Drone War:
Air Power for Strategic Effect**

Flight Lieutenant Kenny Fuchter

The Chinese threat to US interests in the Asia-Pacific Region and implications for US defence arrangements with Southeast Asia and Japan

Wing Commander James Beldon

Gradual Reform or a Turning Point in Russian Military Transformation: How Russian Air Power has developed through Conflict and Reform from 1991-2012

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Viewpoints

Flight Lieutenant Keith Slack
Mr Paul Stoddart

Defence Research Paper Abstracts

Book Reviews

Air Commodore Neville Parton
Group Captain (Retd) Ian Shields

Royal Air Force Air Power Review

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Avro Lancaster with a fixed bouncing bomb under belly



Leader of the Dambusters Raid, Wing Commander Guy Gibson, seen with his crew as they board their Avro Lancaster III ED932/AJ-G for the Dams' Raid of 16/17 May 1943.

L-R: Flight Lieutenant RD Trevor-Roper, Sergeant J Pulford, Flight Sergeant GA Deering (Canadian), Pilot Officer FM Spafford (Australian), Flight Lieutenant REG Hutchison, Wing Commander Guy Gibson, Pilot Officer HT Taerum (Canadian)



Aerial reconnaissance photograph taken on 17 May 1943 showing the breach in the Mohné Dam caused by 617 Squadron's raid during the previous night

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German photograph of the breach wall of the Eder dam



HM King George VI examining the Moehne Dam model with Group Captain Charles Whitworth (right) and Wing Commander Guy Gibson (left) during his visit to Scampton, 617 Squadron's home, on 27 May 1943

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Foreword

By Wing Commander 'Logic' Middleton

For this Autumn/Winter edition of Air Power Review, we are delighted to include articles from several authors who demonstrate the depth of the intellectual base in the contemporary Royal Air Force. Moreover, three of our headline articles have been produced by recipients of support under the Chief of the Air Staff's Fellowship scheme which enables selected members of the RAF to conduct their academic study at the highest levels.

We are also pleased to include a new section starting from this edition in which we will publish the abstracts of the theses from our most recent graduates of the Chief of the Air Staff's Fellowship scheme and the most recent air power related theses from RAF graduates of the Advanced Command and Staff Course at the Joint Services Command and Staff College, part of the UK Defence Academy. The full versions of the theses will all be available from the associated website of the RAF Centre for Air Power Studies www.airpowerstudies.co.uk. As the theses represent the individual views of the authors and in the interests of promoting academic freedom, we have published all the abstracts awarded the highest grades for academic excellence regardless of the topic or conclusions.

This edition begins with a pair of articles that continue the theme of Remotely Piloted Air Systems (RPAS) or 'drones' as many journalists prefer to call them, covered so well by Lieutenant Colonel Andrew Roe in our last edition. Wing Commander Tucker-Lowe opens by challenging us to consider the ethical perspective on the use of drones in all their forms. His thought provoking article encapsulates the legal, ethical and cultural challenges that we face as we seek to increase our use of autonomous or semi-autonomous military systems. RPAS offer many advantages in conflict, most notable being the reduced risk to the operator derived from increasing his separation from the battle-space. However, this dislocation can become the source of new problems as it may result in a psychological dislocation of the operator from the effect of his actions. The cultural perspective adds another dimension to the debate, with pre-modern populations potentially regarding unmanned systems as an indication of lack of commitment or even cowardice. Some commentators believe that the reduction of risk to combatants can also have the effect of making conflict more palatable, and thus arguably more likely. However, as the article explains, this is a disputed theory. The converse effect of the ability to dislocate operators from harm may be to enable intervention earlier in a conflict or even where it would otherwise have been politically unacceptable. Such early engagement to prevent conflict escalation is at the heart of the UK's recent Strategic Defence and Security Review and should result in fewer high intensity conflicts. Thus drones offer a means to prevent conflict. Wing Commander Tucker-Lowe presents both sides of this debate in a balanced and proportionate manner, offering the opportunity to enhance understanding of this important topic.

Flight Lieutenant Kenny Fuchter extends the RPAS debate into the use of drones for strategic effect. In so doing he chooses to focus on an air power perspective. In particular, he highlights

the scale of the use of drones by the CIA against al-Qaeda; considering it as a large-scale air campaign conducted by a non-uniformed force. Moreover, the article proposes that the air campaign has been largely successful when measured against its aims. Not surprisingly, this leads Flight Lieutenant Fuchter to consider not just the ethical aspects that potentially arise, but also the legal. Tackling head on the question of whether the use of drones for Targeted Killing of insurgents is legal, he offers both sides of the arguments including the recent legal justifications from the US Attorney General. Beyond the ethical and legal debate, the article also directly addresses the debate about the utility of drones for Targeted Killing as a tactic in counter-insurgency. This necessarily involves a brief exploration of the arguments for and against Targeted Killing as a tactic, independent of the choice of weapon system. In so doing, the author establishes the need to distinguish between counter-terrorism and counter-insurgency, two activities that are frequently intertwined but that can be very distinct in character. Read together with Wing Commander Tucker-Lowe's article and that of Lieutenant Colonel Roe, readers should be well placed to make their own well informed decision. All three of these RPAS-related articles have referred to the popular use of the term 'drone' as a convenient label for a variety of unmanned and remotely piloted systems, normally regardless of the level of autonomy actually involved. This highlights the need for a better label, one that remains 'tabloid friendly' but better encapsulates the dislocation of the human operator rather than implying his absence from the kill chain entirely.

Wing Commander James Beldon moves us away from drones and into the implications of the potential Chinese threat to US interests in the Asia-Pacific region. This topic has generated much academic interest since President Obama announced a strategic 'pivot' and Wing Commander Beldon offers a very thorough analysis of the current political situation in the Asia-Pacific. His article provides an excellent background to the complex relations between countries within the region and with the USA which is bound to enhance understanding. Wing Commander Beldon explores in depth the often contradictory behaviour of China, the major player within the region, and provides a thorough analysis of the status of China's relations with her various regional neighbours. He also addresses the possibility that the pivot by the USA may prompt exactly the kind of tensions that it was supposed to prevent. Overall, the article provides a robust and well evidenced analysis of China's military capability and potential threat, despite the infamously opaque nature of China's defence budget.

Keeping the focus on an international level, Wing Commander Chantal Baker, offers an examination of the development of Russian air power since 1991, from a western perspective. Set against the backdrop of reforms across the Russian state and particularly in the Russian military, her article uses key examples from recent history to demonstrate both the drivers for change in Russian air power and the effect those changes achieved when they finally happened. In particular, the two Chechen conflicts and the more recent Georgian conflict are used to provide evidence for the evolution of Russian air power. Wing Commander Baker

considers the full spectrum of Russian air power across what we might recognize as defence lines of development. In so doing she highlights the scale of the challenge faced by the pro-reform lobby in Russia, not least due to the institutional inertia that had to be overcome and the desire of many senior commanders to resist change. It is left to the reader to draw any parallels between the Russian experience and that of the UK. However, whilst the challenges facing the RAF and the Russian air force are almost as different as is possible, there are doubtless lessons to be learned from the process of change. It is also useful to understand the extent to which the actions of NATO governments are a driver for change in Russia, both positive and negative.

This edition of Air Power Review also contains two personal viewpoints that are intended to stimulate debate. The editorial team would welcome comments in response to either viewpoint and would be delighted to consider publishing constructive comments in the form of a simple letter or even a counter viewpoint.

The first of our viewpoints has been provided by Flight Lieutenant Keith Slack; he offers a personal perspective on what he believes to be an unrecognized category of intelligence, motion intelligence, or MOTINT to borrow his proposed acronym. His views are likely to divide opinion with some doubtless left thinking that he has simply applied a new name to an old concept and thus offered nothing new or even that some things to which he applies the label MOTINT are not actually intelligence at all, offering only information without analysis. Equally, his concept of MOTINT could become so all encompassing that almost all observation of an enemy falls within the category of MOTINT. Conversely, others may choose to accept Flight Lieutenant Slack's assertion that how we label intelligence drives how we manage it and who controls it; the institutions that coalesce around labels often drive the employment and utility of different types of intelligence. Thus recognizing that motion is a key aspect of contemporary intelligence and labelling it accordingly, may allow it to be handled in a more coherent and constructive manner, to the benefit of defence.

Our second viewpoint, by Mr Paul Stoddart, re-opens the debate on Effects Based Operations. Whilst Effects Based Operations may now be obsolete as a doctrinal term, there can be no disputing the fact that our approach to operations remains centred around understanding and achieving effects. Mr Stoddart offers his views on how what he regards as slack terminology can contribute to misunderstanding of an effects based approach to operations.

Finally, two books have been reviewed for this edition. The first, reviewed by Group Captain (Retd) Ian Shields, is James Holland's "Dam Busters: The Race To Smash The Dams 1943". With the seventieth anniversary of the raid and the release of the latest film both due next year, this book will doubtless be of interest to many of our readers. The second book offered for consideration is something of a change to our typical subject matter, "The Capture of

Louisbourg 1758 by Hugh Boscawen", reviewed by Air Commodore Parton. Nonetheless, Air Commodore Parton provides a thorough review that is likely to stimulate those with an interest in military history.

Notes on Contributors

Wing Commander Nick Tucker-Lowe was born in Guernsey in 1972 and after attending The Guernsey Grammar School, joined the Royal Air Force 1992. On completion of fast jet flying training he qualified as a pilot on the Jaguar. He completed his first tour on No. 6 Squadron in the ground attack role and flew operations in the Balkans and Northern Iraq in addition to exercises across Europe, the USA and Canada. Subsequently he completed tours as a Qualified Weapons Instructor on the Jaguar Operational Conversion Unit and, on promotion to Squadron Leader, was the Jaguar Staff Officer on the Strike Attack Operational Evaluation Unit, Boscombe Down. Nick then transferred to the Tornado GR4 as a flight commander on No. 12 (Bomber) Squadron. During this tour he deployed twice to the Arabian Gulf where he flew operational sorties throughout Iraq. Furthermore as the Squadron lead for Air Land Integration, he forged close working relationships with the deploying British Brigades and Divisions in Basrah. Promoted Wing Commander in 2008 Nick assumed the appointment of Principle Air Staff Officer in Headquarters 3rd (United Kingdom) Division. Subsequently he successfully completed Advanced Command and Staff College at the United Kingdom Defence Academy where he gained an MA in Defence Studies from King's College London. He took command of No. 11 (Army Cooperation) Squadron in January 2011. In April he deployed with the Squadron to Gioia del Colle, Italy for 5 months as the commander of the Tornado contingent for Operation ELLAMY – the UK contribution to UN Resolution 1973 which protected the civilians of Libya from Gadhafi's forces. For his leadership in combat, Tucker-Lowe was awarded the Distinguished Service Order. Wing Commander Tucker-Lowe is married with two children. In addition to a love of flying, he enjoys hill walking and sailing.

Flight Lieutenant Kenny Fuchter is a serving Royal Air Force Officer. An MLitt graduate in Strategic Studies at the University of Aberdeen in 2007, he was awarded a Portal Fellowship in 2009. He is currently undertaking part-time research for a PhD in Aviation Terrorism at Kings College London. He has served operationally in Turkey, Oman, Kuwait, Iraq and Afghanistan, in support of many of the RAF's fixed wing and rotary aircraft types and he has recently returned from a six month tour training and mentoring Afghan security forces.

Wing Commander Jim Beldon is Officer Commanding No 8 Squadron operating the Sentry AEW 1 at RAF Waddington. With over 3000 flying hours, he participated in operations over Bosnia and Operation ALLIED FORCE in the 1990s, and took part in Operations TELIC and HERRICK in the 2000s. A graduate of the Advanced Command and Staff Course, he recently graduated with a Master of Philosophy degree in International Relations from the University of Cambridge, completing a thesis exploring Sino-Indian strategic competition and the ramifications for the West and Russia.

Wing Commander Chantal Baker joined the RAF in 1999. A personal support specialist, she has served on MOB's including Lossiemouth, Coningsby and the Home of the RAF

Regiment at RAF Honnington. She has deployed twice to Op HERRICK and also served on the Operational HQ staffs of Op ATALANTA, PJHQ. Most recently she was the DPSO to CINC AIR before being awarded a CAS Fellowship to study at the Elliott School of International Affairs, Washington DC. She is currently on ACSC16 at the Joint Command and Staff College.

RPAS and the Ethical Landscape of Contemporary Conflict

By Wing Commander Nick Tucker-Lowe

This article considers the ethical implications of uninhabited systems against the backdrop of rapid technological development and the changing character of conflict. The author argues that contemporary conflict is complex and contextually sensitive, and that ethical debate is lagging behind the development and proliferation of uninhabited combat systems. Consequently without timely debate, development risks detracting from humanity in warfare and may exacerbate inter-societal divisions.

RPAS and the Ethical Landscape of Contemporary Conflict¹

Introduction

... science gathers knowledge faster than society gathers wisdom.²

The employment of uninhabited systems in combat is an emotive subject and is becoming increasingly so as uninhabited system proliferation accelerates. Uninhabited systems are attractive to the military and politicians alike as they offer persistent capabilities, can be relatively cheap, go where combatants cannot go and reduce combatants' exposure to risk. Consequently, for many years uninhabited systems have been acclaimed for their suitability for the '3Ds tasks: dull, dangerous and dirty'.³ The crux of this debate is in the nature and use of uninhabited systems when combatants face the ethical paradox of killing.

To inform the debate, it is necessary to consider two questions of ethics: to what extent can the battle-space be automated, and what are the implications of further removing personnel from the battle-space? The current degree of disconnection, reduced personal risk and the potential reduction in the burden on the individual for taking another human's life does alter the current ethical landscape; however, it does not fundamentally change it. The advent of full autonomy would precipitate fundamental change, but this paradigm shift is yet to emerge due to the technological challenges of assuring discrimination and proportionality, the inability to maintain accountability and the incapacity of computers to differentiate when one *should not* act although legally one *could* act. Nevertheless the implications of uninhabited systems modifying target and individual behaviours, and positively or negatively modifying civilian or enemy ethical perceptions of the friendly forces, already vary in degrees dependent on perspective. Furthermore, use of uninhabited systems by some countries in the ethically controversial context of targeted killing may catalyse fundamental change.

When considering these questions, four themes emerge. First, that the ethical landscape and the character of conflict are ever-changing, due to the pace of technological development and consequential reactions. Second, the perceived degree of change is dependent on perspective due to differing societal norms. Third, law satisfactorily answers the majority of questions in modern or post-modern military force-on-force applications, where the options are 'can or cannot'. In complex hybrid conflicts, legal 'can or cannot' guidance is insufficient, ethically based socio-political situational understanding is required to decide when combatants 'should or should not' act. Finally, ethical decisions pertaining to '3Ds tasks' are relatively straightforward; the crucial decisions are those for tasks that are distant or deadly. To show this, first the scene will be set by taking a snapshot of the development of uninhabited systems against the character of contemporary conflict and the existing ethical landscape. Then the ethical questions pertaining to the use of uninhabited systems and the changing cultural importance of the warrior will be considered. Finally this article will explore potential political and ethical implications of uninhabited systems.

Modern Uninhabited Systems and the Contemporary Ethical Landscape

Uninhabited systems have been given various terms during their history, but consensual nomenclature remains elusive. The US had broadly used the terms unmanned systems or unmanned combat systems, highlighting the multi-component nature of the capability, yet journalists often refer collectively to such as robots or drones. The Royal Air Force (RAF) has adopted the terms Remotely Piloted Aircraft (RPA) and Remotely Piloted Air Systems (RPAS), reassociating such with their human controllers.⁴ This is not semantics; nomenclature identifies both a type of system and its nature of use. Ethical and legal consideration of passive uninhabited systems, such as the reduction of personal risk associated with bomb disposal robots, has deemed such systems as relatively uncontroversial.⁵ It is those considerations associated with distant operations, particularly if controversially penetrating another country's sovereignty, and the application of deadly force which remain most ethically challenging. Consequently, while the '3Ds tasks' adequately describe passive uninhabited systems, to encompass offensive uninhabited systems this is better articulated as the '5Ds tasks': adding distant and deadly. The nature of the task is further dependant on the system's degree of autonomy, from a fully autonomous system, which can satisfactorily make the decisions demanded of a human, to one that has some autonomous functionality, but which requires considerable human input or guidance.⁶ It is too simplistic to consider all uninhabited systems as broadly similar and the same is true for the ethical landscape of conflict.

The nature of war does not change, but the character of conflict does, and that change demands the closest attention.⁷ Indeed the character of conflict is a subjective combination of political, military, societal and cultural elements.⁸ The characteristic essence of contemporary or hybrid warfare has been argued to be the simultaneity and barbarity of force-on-force fighting, counterinsurgencies and counter-terrorism.⁹ Similarly, while ethics may be differentiated from morals as general truths and objective principles, these are neither so objective nor so general to be universal. The ethical landscape of contemporary conflict is analogous therefore to the visual effects of low sun over varying terrain. Ethically similar concepts with differing histories may emerge from an array of differing perspectives as light on gently rolling ground: full of subtlety with few hard contrasts. However, an ethical division between societies may appear as a starkly silhouetted ridge-line from one perspective yet is so well-lit from another than it is indistinguishable from the background. The addition of global extremist ideologies such as *Takfiri*¹⁰ has also served to split established societies' ethical norms, further complicating the ethical landscape. Macroethical rifts also scar the contemporary landscape due to the resurgence of 'Just War theory'¹¹ and increasing casualty aversion in post-modern societies, a trend not mirrored in pre-modern society. Moreover the irony of post-modern warfare has been fuelled by Western powers' overwhelming technological advantage. Pre-modern enemies have used this approach to dehumanise post-modern forces and thus maintain a sense of local moral superiority.¹² Consequently contemporary combatants are required to make decisions based on more than law and military pragmatism: on fine ethical judgements based on sound personal morals and a remarkable degree of contextual understanding. The ethical landscape contains dilemmas where combatants may

elect to take greater risk of sustaining friendly combatant casualties due to the consequentially disadvantageous effect on the objective population. There are occasions when combatants *could kill* but *should not* kill. The ethical landscape of contemporary conflict is complex: it is subtle and stark, based on ancient theory yet evolving daily, consequently it is remarkably sensitive to temporal and societal perspective. A slight change in the nature of an action on the system, such as those intrinsic to the advent of uninhabited systems, can therefore produce an array of likely outcomes, some of which may be profound and none of which are more significant than when deciding whether or not to kill.

The Ethical Considerations of Killing using Uninhabited Systems

The crux of the military ethical paradox is the decision to kill in order to save life. The advent and actions of uninhabited systems does not fundamentally change the ethical landscape, at least not yet. They do however shape the landscape and in a rather uneven way. Some argue that the logical drive to reduce risk to friendly forces will result in 'more and better robots' and ultimately to a utopian 'fully autonomous engagement without human intervention.'¹³ In one sense, uninhabited systems are an ethically logical progression and akin to the stand-off advantage of the longbow compared to thrown projectiles. Others however recommend caution because 'Humans understand one another in a way that systems cannot and we don't fully understand how.'¹⁴

For more than a century the nature and employment of certain weapons has been discussed by ethicists and such discussions have informed policy. Uninhabited systems are not fundamentally unethical *per se*, but they do deserve examination as they share some attributes with previously censured weapons such as crossbows and land mines, moreover their nature of employment could affect their ethical standing. For example, uninhabited systems differ to mines in many respects, but also share similarities, and with mines and cluster-munitions have been described as so 'cruel as to be beyond the pale of human intolerance.'¹⁵ However, only fully autonomous uninhabited systems could kill without human decisions from point of deployment to time of killing. The foremost advantages of all but fully autonomous uninhabited systems are temporal and that they are systems, not weapons. The decision to kill is taken by a combatant far closer to the time of killing and with vastly superior discrimination than is possible for a land mine distributor. Therefore, the combatant is capable of a greater degree of responsibility for the actions of the uninhabited system than may be the case for a land mine distributor. Of course this assumes that to decide to kill can be reasonable.

The decision to kill is a paradox of human survival. Moreover, the will to kill underpins the most fundamental characteristic of war: that killing can be *just*. Hence combatants are not normally considered as murderers. Unless a nation is engaged in a Clausewitzian 'total war', there will be rules: killing will be controlled, such as limiting killing to last resort self-defence. Furthermore, many contemporary conflicts are not legally 'wars' but conflicts. Even wars of national survival do not absolve the leadership of moral obligations, as the state is part of an international system that interprets the state's actions. In contemporary conflicts, however,

where positively influencing the objective population is crucial, the decision to kill is particularly complex. It is therefore advantageous to gain broad consensus on the ethical justification for killing. Nevertheless, the irony of killing is inescapable; deciding to kill may be considered therefore in 'degrees of awfulness'.¹⁶ Furthermore that 'degree' is affected by the risk that the combatant is facing.

Combatants accept risks in conflict that otherwise they would deem unacceptable. This is reflected by the conceptually and geographically representative cliché of a combatant 'going to war'. Notwithstanding the advantages of technological development, the acceptance of risk, including the risk to one's life, is critical as the decision to kill is an emotional contest.¹⁷ When combined with the humanity of the cosmopolitan stoic, while it may be more ethical to remove the combatant from conflict and risk of being killed, removal of the combatant may make killing less ethical. Furthermore, the impact of personal risk on the ethics of defending against aggression is significant as 'Aggression is a singular and undifferentiated crime because, in all its forms, it challenges rights that are worth dying for.'¹⁸ If aggression was opposed without risk of dying, this could be perceived as aggression being less of a crime and that the human price to counter aggression was one that might be unacceptable. In either case, if a combatant was *completely* removed from risk of death when deciding whether to kill was *just*, it would fundamentally change the ethical landscape of conflict.

Many have highlighted that such remote combatants do not physically 'go to war' and that being psychologically detached from the horrors of war, risks altering the character of war itself.¹⁹ Evidence from the Vietnam War identified reductions in the psychological consequences for US Air Force pilots, operating thousands of feet above the jungle floor, when compared with their ground-based US Army colleagues. This 'morality of altitude' was attributed to the pilot's disconnection from the destruction his decisions caused.²⁰ The development of long-range RPAS control accentuates the concept by significantly increasing stand-off. Furthermore, removing the pilot from the aircraft reduces his exposure to risk. Consequently, this concept could be more contemporaneously expressed as the morality of disconnection. Disconnection threatens to change the ethical landscape, but only if one perceives that the quality of the decision to kill, the degree of personal risk taken by the combatant or the responsibility for his actions has fallen below a reasonably acceptable threshold. Indeed some have questioned whether dislocation risks the combatant's psychological well-being, as he realises he is unable to intervene when driven by cosmopolitan stoicism.²¹ Others have questioned the potential psychological effect on dislocated decision-makers, who decide to kill a human target in another country while seated at a control station near their home.²² If the degree of disconnection affects the ethical landscape, it is reasonable to suggest that the degree of autonomy would also affect it, so this too demands consideration.

While uninhabited systems can be relatively cheap when compared to manned systems, ironically the personnel budget required to operate uninhabited systems can be considerable.

A greater degree of autonomy could let one decision-making combatant supervise several systems concurrently, thus reducing the personnel burden while retaining control and responsibility. Moreover due to the processing power of modern computers, assuming it receives the necessary inputs, such computers could decide on the apposite option more quickly than a human could.²³ Such concepts are reliant on 'human supervisory control'.²⁴ Initially, human supervisory control would appear to offer something to many: reduced cost, quicker decisions and adequate control. Further analysis however proves paradoxical, highlighting the risk of ethical unacceptability. It is deemed legally acceptable that an RPAS operator can decide to commit an autonomous weapon system once he considers that it is capable of discriminating satisfactorily by limiting its options to those which are legal.²⁵ Yet as autonomy enables a reduction in human involvement, human machine interface issues multiply, which could degrade individual responsibility. Indeed although autonomy can offload many of the tasks from the combatant, allowing him to devote more attention to decisions, by the very nature of his detachment from those tasks, he is at greater risk of dislocation and insufficient understanding leading to inadequate decision-making. While human supervisory control offers personnel reductions and computer-aided decision-making, ironically human decision-making quality and reduced accountability risk undermining the ethical nature of the decision to kill. So what if the degree of autonomy is increased further?

A fully autonomous armed system is the extremity of the autonomous spectrum, yet it is not so futuristic when considering the current proliferation of robotic systems in industrial and military '5Ds tasks' or the seductiveness of technology to make war more humane. The critical element is not the mechanics of robotic systems, rather the implications of the development of artificial intelligence: a sentient system deciding to kill. Just because an autonomous system decides it *could* kill does not mean it *should* kill. While autonomous attack may be appropriate in some circumstances, numerous environments will remain where qualitative human judgement is essential. Indeed responsibility for a fully autonomous system's decision to kill may not be reasonably attributable. Ultimately, removal of the combatant's moral burden could dehumanise war. Academic opinion is split on whether any autonomous armed systems can make conceptually ethical decisions. There are compelling reasons for autonomous decision-making. Purely logical decisions could be more ethical than human decisions, as they are not emotionally value-laden. Moreover, due to the logic process, autonomous systems are constrained to follow orders; deviation into brutalisation or atrocity is unlikely, if appropriately programmed.²⁶ Conversely, a human's ability to think metaphorically and use analogies provides moral character; no robot can do this.²⁷ Furthermore, qualitative reasoning is intrinsically subjective and underpinned by feelings. Systems are not yet capable of feelings; sentience remains an aspiration. Indeed sentience may never be achieved, as it may prove impossible to produce a man-made version of the human mind.²⁸ Central to the ethical decision to kill are the abilities to discriminate and to act proportionally; tasks that draw heavily on subjective human assessment. For example, many argue that systems cannot discriminate sufficiently between civilians and combatants as although they can confirm 'not friendly', they cannot confirm anything else.²⁹ To act ethically, an autonomous system would require more

than iterative decision-making, it would need to feel guilt for wrong-doing and compassion to refuse an order. Guilt is theoretically achievable but compassion is elusive.³⁰ An autonomous system could not be used with the same ethical basis as a human decision-maker in the majority of contemporary conflict environments, as it would not be able to autonomously determine when it *could* but *should not* kill. Consequently unless artificial intelligence is trusted to automatically discriminate, act proportionally, deal with ambiguity, and react to guilt *and* compassion, it would require human authorisation to achieve an adequately ethical decision, both in practical terms and to ensure accountability. Finally, it could be argued that many people could be responsible for the actions of an autonomous system: the commander, support staff or the programmer. 'If the nature of the weapon or other means of war fighting, is such that it is *typically* impossible to identify or hold individuals responsible for the casualties that it causes then it ... will not be ethical to employ this means of war.'³¹ The acceptable degree of autonomy still has many questions unanswered and owing to the effect of cultural perspective, *the* answer may never exist.

Perceptions and Reactions to Uninhabited Systems

It is important to realise that no global ethical baseline exists. Consequential perceptions and the effects of cultural perspectives could affect the complete array of uninhabited systems. When considering the effect of other perspectives, such as that of the Muslim world, it is important to understand the differences, and that such are rarely diametrically opposed or even distinct. For example, 'there is not one canon of [Islamic] theological and juridical texts' and ideological concepts differ in time, place and interpretation.³² Moreover there may never have been an Islamic parallel to the published Christian Just War literature.³³ Differentiation between the Muslim world and the *Western* rather than *Christian* world highlights that furthermore, cultural norms may be viewed through two societal lenses: one religious and the other secular. Many of these consequential incompatibilities are minor, and indeed there are many commonalities between post-modern secular Just War theory and pre-modern Islamic juristic tradition. Nevertheless differences are notably stark when considering the role of the human in war: the warrior ethos and the role of honour. Some argue that such cultural norms are increasingly divergent due to 'the insidious rise of post-modernism, ending the West's distinctive honour culture.'³⁴ In post-modern Western society, the description of a combatant as a warrior is uncommon. Industrial war has helped dull popular post-modern concepts, replacing self-esteem with 'respect', ideological belief with utilitarianism, and distancing concepts of bravery and honour. The proliferation of uninhabited systems risks catalysing the Western dilution of warrior ethos, and exacerbates the widening gap between post-modern and pre-modern societies. Warriors remain central to conflict; conflict without warriors illuminates the ethical landscape in the starkest contrast. Moreover, depending on whether the observer is friendly, an enemy or part of a population, their perspective of the uninhabited system could be similarly contrasted.

Uninhabited systems are frequently accepted as welcome additions to friendly forces due to their ability to conduct the '3Ds tasks.' From the author's own combat experience of air-land

operations though, the greatest value provided by an aircraft, manned or uninhabited, in a tense ground situation is not the mere presence of the aircraft, but the substantial verbal reassurance the aircrew provide. As standoff increases, so does the risk of disconnection detracting from effective verbal reassurance. Moreover due to perceptions of uneven risk exposure, the psychological bond between the uninhabited system, the remote operator and those in the battle is weakened. Conversely when remote stand-off is minimised, the bond between operator, fellow combatant and the uninhabited system can be strong. Indeed during 2003 in Iraq, this led US soldiers to mourn the loss of their 'PackBot' uninhabited system, which they had chosen to name 'Scooby-Doo'.³⁵

From the enemy's perspective however, new technology can appear shocking and terrible; an uninhabited system killing an enemy in a comparably ethical manner may be more dispiriting for the dead enemy's colleagues than if killed by a human adversary.³⁶ Furthermore, the technological capability of uninhabited systems may not be understood by enemies, which can provide significant intelligence advantages for minimal human risk, as the enemy unwittingly fails to protect valuable information.³⁷ The unusual becomes usual however; uninhabited systems appear less shocking with time and unknown capabilities become understood. Moreover from the Islamic ideological perspective, uninhabited systems have been frequently perceived as dishonourable.³⁸ Uninhabited systems militate against stoicism; they create fear in enemies *and* reveal fear amongst friendly populations.³⁹ Any perceptions of dehumanised war risks offering those enemies, who are not truly ideologically guided, a justification for inhumane brutality and atavistic violence.⁴⁰ Paradoxically, a technological invention designed to be more humane may incite a less humane enemy response.

The perception of uninhabited systems within an objective population is likely to be different to, yet not necessarily opposed to, that of the friendly forces' homeland population. For democracies, the home population's support and sympathetic international opinion are essential for persistent campaigns. Yet it is the effective positive influence of the objective population to follow their nascent or redeveloping government that proffers success in such campaigns. The proliferation of uninhabited systems partially obscures the human face of conflict from these audiences, which could be perceived to change the ethical landscape. The home population can quickly acknowledge the humane advantages of uninhabited systems for the '3Ds tasks', as this translates to fewer dead and wounded countrymen. Popular support for all of the '5Ds tasks' is more problematic. Indeed, the language of such activity has become pejorative with increasing reference to 'drones' when pertaining to RPAS strikes, but terms such as 'UAV' frequently being used for '3Ds tasks'.

To win the contest of narratives in contemporary conflict therefore it is important to understand the likely reaction to uninhabited systems across an objective population. The use of uninhabited systems may be highly desirable when considering the enemy, yet by the population it may be considered ethically advantageous and disadvantageous; simultaneously minimising the external effect on the population's routine, yet potentially detrimentally altering

their view of foreign forces and local government. Uninhabited systems can reduce the footprint of occupying forces through substitution or because they supplement existing forces, but are controlled at range. Uninhabited systems could therefore provide reassurance for the objective population, assuming their activity was perceived as ethically acceptable. Indeed in the Federally Administered Tribal Areas of Pakistan (FATA), where RPAS strikes were initially overwhelmingly condemned by the objective population, their unpopularity diminished as they began to be perceived as a 'lesser evil' than the insurgents.⁴¹ Conversely, uninhabited systems supplementing or substituting occupying forces could be perceived as diluting commitment to conflict resolution, because manpower-contributing nations demonstrate resolve by risking the lives of their own combatants.⁴² Moreover, any enemy perception of cowardice through the use of uninhabited systems could easily spread to the objective population making conflicts harder to resolve, particularly if culturally akin to Pashtun belief that 'Courage is the coin of the realm'.⁴³ When combined with reduced physical presence stymieing genuine partnerships, occupying forces could be alienated from the objective population. Indeed contributing nations that minimise their manpower footprint are sometimes perceived as preferring safer, 'distant war'.⁴⁴ Yet there are fewer ethical challenges for the employment of uninhabited systems in geographically separate, contemporary military force-on-force short duration conflicts.⁴⁵ The most significant ethical challenges arise, however, when uninhabited systems are used where human interaction is vital, including counter-insurgencies and prolonged conflicts, where maintenance of moral ascendancy at home and in theatre is crucial.⁴⁶ In such campaigns, uninhabited systems may be successfully used in the short-term when targeting irreconcilables or forcing them from their desirable area of operations. A paradox exists however, as in the longer-term the destructive combination of uninhabited systems' highly technological nature and the ethical perceptions of their use can ferment 'accidental guerrilla syndrome' where more insurgents are bred from the objective population through the actions of coalition forces than are reconciled or killed.⁴⁷ Critically, the potential for perceived abandonment of combatant honour and warrior ethos or the popular perception of dehumanised war risks fundamentally changing the ethical landscape of conflict and brings with it significant implications.

Wider Implications of Uninhabited Systems

... instead of total war, we have the promise of easy war – easy in the sacrifices it demands of us, easy on our consciences, easy on our pocketbooks.⁴⁸

The effects of uninhabited systems on the ethical landscape of counter-insurgency are not consistent for other forms of conflict or indeed activities that do not cross the legal threshold to be 'conflicts'. Uninhabited systems can successfully reduce the number of combatants exposed to risk in '5Ds tasks' and are therefore arguably sensible, humane tools for conflict resolution. Furthermore, advanced, closely-coupled sensors and weapon systems can reduce error margins, protecting civilians. Yet to risk fewer lives in conflict, governments may be attracted to choose uninhabited systems that are either perceived as being less ethically acceptable by other cultures, or are actually less ethically acceptable, because they indiscriminately

or disproportionately increase enemy and civilian casualties. Governments risk striving for 'humane warfare' but missing the irony or absurdity of the phrase and thus select practicality, mistakenly believing it brings ethical advantage.⁴⁹ Such quandaries are less evident in geographically distinct, force-on-force conflicts where uninhabited systems could significantly reduce combatant casualties on both sides by focussing on neutralising military equipment, consequently destroying the will to fight when facing an overwhelming force.⁵⁰ In prolonged campaigns, however, technologically leveraged dehumanised approaches are more likely to drive a wedge between post-modern and pre-modern societies, feeding perceptions of ethical inequality and producing disadvantageous influences of the enemy and objective population.⁵¹ Such perceptions may be overcome if post-modern societies can successfully articulate uninhabited systems' ethical advantages in terms that are similarly acceptable to pre-modern societies. The RAF's adoption of the term '*Remotely Piloted Aircraft*'⁵² to address the misconception that there is no human involvement in their operation is such an attempt. Notwithstanding the need to dispel misconceptions about uninhabited systems in order to realise their potential, inconsistent ethical perceptions will continue due to the audience's varied nature and inherent cultural inertia.

In March 2003, before Operation IRAQI FREEDOM, one prominent US academic suggested that notwithstanding the lack of proof that the realities of conflict had changed, the perception was evolving that the mass brutality of industrial twentieth century war was being replaced by 'easy war.' Indeed when considering the US's commitment to that contentious conflict, it was suggested that: 'Perhaps that's why Americans are so ready to go to war. There is no sense that we will have to bear any burden whatsoever in fighting it.'⁵³ Certainly Western governments pay close attention to their military's casualty rates, but whether there is a direct correlation between reduced losses and increased appetite for conflict is a point of contention. Some have argued the Hobbesian view that as risk is reduced, so is restraint.⁵⁴ Conversely others have recommended reasserting the net humanitarian advantages of uninhabited systems, rebutting any accusation of 'some abstract increased propensity for violence.'⁵⁵ If the proportionality and discriminatory capability of the uninhabited system is maintained, as autonomy increases and the combatant's exposure to risk reduces, the enticements for dehumanised conflict could intensify. Ironically, such enticements may gain ethical traction, if it is robustly argued that the ability for earlier intervention, leveraged by the lower-risk use of uninhabited systems rather than manned solutions, can reduce total casualties in the longer-term. Furthermore reduced casualty acceptance may detract from the likelihood of sustained conflict, which could be ethically advantageous or disadvantageous. If post-modern conflict is perceived to attract less personal or political risk, the forecast or actual number of friendly casualties that fundamentally changes the political will, for conflict commencement or continuation, could drastically reduce.

Uninhabited systems are already being used to conduct distant and deadly missions that would otherwise be unacceptable due to casualty aversion. Israel and the US have frequently used RPASs for targeted killings as preventative self-defence: precision strikes on insurgents

and terrorists before they can act. Indeed the US has annually increased their use since 2007.⁵⁶ Targeted killings by RPASs have been shown to be an effective counter-terrorism tactic, particularly in areas where the terrorist would be otherwise unreachable by either law enforcement authorities or the military. Targeted killings using RPASs in the FATA have however generated significant international controversy with many questioning their legality, including the UN's Special Rapporteur on extra-judicial killings.⁵⁷ Others have argued that they are legal, within certain boundaries, as 'the international normative paradigm of hostilities does not prohibit, but imposes extensive restraints on the method of targeted killing.'⁵⁸ Indeed some have blamed terrorists and insurgents for the controversy, as it is they who hide amongst the protected civilian population 'acting in gross violation of the rights of others and of the rules of war.'⁵⁹ US authorities had previously denounced what it deemed were Israeli extra-judicial killings of Palestinians.⁶⁰ More recently however, US authorities have remained notably quiet regarding the use of RPASs for targeted killings, even though they have been asked to formalise a framework for targeted killings and thus quell the ethical disquiet. Indeed some academics have concluded that on balance the sustainability of targeted killings should be ensured through open justification and agreement of their legitimacy.⁶¹ Although the UK does not utilise preventative self-defence or conduct targeted killings, RPASs similar to those used for targeted killings by others are used by the RAF for offensive tasks to support land forces. Unless the legal and ethical differences in national approaches are explained, the increasing use of RPASs for targeted killings, risks wrongly stigmatising all RPASs, and uninhabited systems more broadly, as unethical.

Conclusion

The advent of uninhabited systems has led to the widely accepted realisation of the great utility they offer, so their development and proliferation are likely to continue. The considerable ethical advantage of uninhabited systems for dull, dangerous and dirty tasks is broadly accepted. It is predominantly those tasks which are deadly or which are distant that are crucial to the debate and which are already generating more ethical controversy. Concurrently, the ethical landscape of conflict is also changing, creating new ethical dilemmas.

While uninhabited systems and computer-aided decision-making offer the potential for greater objectiveness, using distance to assuage undesirable human emotions such as rage, they also potentially repress admirable human emotions, notably compassion. Furthermore, increasingly disconnected decision-making risks losing contextual sensitivity, which is fundamental to fine judgement and thus ethically robust decisions to kill. If the ethical basis for future conflict is to remain extant, broad agreement of the acceptable level of autonomy for uninhabited systems that can kill must be sought.⁶² A greater degree of autonomy maybe acceptable in geographically distinct force-on-force operations, where the crux of the decision to kill is legal: whether the combatant uninhabited system operator *could* or *could not* kill. Such straightforward legal decisions are insufficient for contemporary hybrid conflicts however, where an additional ethical basis is required to answer whether the combatant *should* or *should not* kill.

Just as war itself is judged at least twice, so are uninhabited systems. The advent of uninhabited systems affects the principles that formed the ethical landscape *and* the consequential effects on that landscape, actual or perceived. The principle of distant and deadly uninhabited systems has altered the ethical landscape, but it is the consequential nature of use that has catalysed fundamental change. The risk reduction advantages of uninhabited systems have been seized upon by some as proof of cowardice and with implications for more conflicts, even though uninhabited systems were developed predominantly as a more humane tool for certain tasks. Therefore to maximise the potential advantages of uninhabited systems in contemporary conflict, requires clear articulation of their nature, including their degree of human control. Moreover, achievement of thorough ethical understanding demands cross-cultural debate regarding uninhabited systems' principles and consequences. Ironically, without such debate the remarkable success of uninhabited systems to conduct 'SDs tasks' could also be their principal limitation.

Although the ongoing drive for autonomy is understood, the ethical implications of uninhabited systems are not. Uninhabited systems are already reshaping the ethical landscape and full autonomy would fundamentally change it. Contemporary ethical perceptions of the use and implications of uninhabited systems, such as targeted killing and dehumanised war respectively, are disparate and risk mistakenly being perceived as owing to uninhabited systems themselves, rather than more accurately owing to wider ethical issues in contemporary conflict. Although conflated, such perceptions also risk fundamentally changing the ethical landscape. Nevertheless alteration to the ethical landscape of conflict could be constructive as well as destructive. In all cases therefore, ethical debate must at least keep pace with the development of uninhabited systems and ideally should lead it; if not we are destined to prove Azimov's hypothesis that '... science gathers knowledge faster than society gathers wisdom.'⁶³

Notes

¹ This article is adapted from the author's *Does the Advent of Uninhabited Systems Fundamentally Affect the Ethical landscape of Contemporary Conflict?* (Advanced Command and Staff Course 13 Defence Research Project, Joint Services Command and Staff College, 2010).

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³ Brian Burrige, "Post-Modern Warfighting with Unmanned Vehicle Systems: Esoteric Chimera or Essential Capability?" *RUSI Journal* 150, no. 5 (2005): 20.

⁴ United Kingdom, Royal Air Force, *Adoption of new terminology for the RAF: Remotely Piloted Air Systems*, 4 News Brief (London: Ministry of Defence, 2010), 1.

⁵ William Boothby, *Weapons and the Law of Armed Conflict* (Oxford: Oxford University Press, 2009), 81.

⁶ Allison Mardell, "Unmanned Aerial Vehicles – the Legal Perspective," in Owen Barnes, ed., *Air Power: UAVs: The Wider Context*, (Royal Air Force Directorate of Defence Studies, 2009), 69.

⁷ Carl Von Clausewitz, *On War*, eds. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 220.

- ⁸ Colin Gray, "Future Warfare: Or, the Triumph of History," *RUSI Journal* 150, no. 5 (2005), 19.
- ⁹ Frank Hoffman, *Conflict in the 21st Century: The Rise of Hybrid Wars* (Virginia: Potomac Institute for Policy Studies, 2007), 7.
- ¹⁰ *Takfiri* is an extremist ideology in which non-Muslims and non-*Takfiri* Muslims 'are infidels who must be killed.' See David Kilcullen, *The Accidental Guerrilla: Fighting Small Wars in the Midst of a Big One* (New York: Oxford University Press, 2009), xviii.
- ¹¹ Just War theory including the concepts of *Jus ad Bellum* and *Jus in Bello* are based on St Thomas Aquinas's twelfth century adaptation of Augustine of Hippo's earlier theory.
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- ¹⁷ Clausewitz in Peter Almond, "Manning Unmanned Air Vehicles: Fighter Pilots or Geeks?" *RUSI Defence Systems* 12, no. 1 (2009): 79.
- ¹⁸ Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations*, 3rd ed. (New York: Basic Books, 2000), 53.
- ¹⁹ Jason Palmer, "Call for Debate on Killer Robots," *BBC News*, 3 August 2009, <http://news.bbc.co.uk/1/hi/technology/8182003.stm> (accessed 23 November 2009).
- ²⁰ Burrige, "Post-Modern Warfighting", 22.
- ²¹ Stephen Sackur and Chris Bowlby, *Robo Wars* (BBC Radio 4, broadcasted 1 February 2010).
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- ²³ Sharkey, interview with author, 11 December 2009.
- ²⁴ Mary Cummins, "Supervising automation: humans on the loop," *AeroAstro*, no. 5 (2007-2008): 7, <http://web.mit.edu/aeroastro/news/magazine/aeroastro5/aeroastro5.pdf> (accessed 5 March 2010).
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- ²⁶ Ronald Arkin in Elizabeth Quintana and Olivier Grouille, "Debate: Robots and Robotics," *RUSI Defence Systems* 12, no. 3 (2010): 32.
- ²⁷ Christopher Cocker, interview with author, 28 May 2010.
- ²⁸ Sharkey, interview with author, 11 December 2009.
- ²⁹ *ibid.*
- ³⁰ Arkin in Stew Magnuson, "Debate Over Legality of Robots on the Battlefield," *National Defense* (November 2009): 29.
- ³¹ Robert Sparrow, "Killer Robots," *Journal of Applied Philosophy* 24, no.1 (2007): 67.

³² Fred Donner, "The Sources of Islamic Conceptions of War," in *Just War and Jihad: Historical and Theoretical 32 Perspectives on War and Peace in Western and Islamic Traditions*, eds. John Kelsay and James Turner Johnson (New York: Greenwood Press, 1991), 32.

³³ *ibid.*, 57.

³⁴ Michael Evans, "Stoic Philosophy and the Profession of Arms," *Quadrant* 54, no. 1-2 (2010), <http://207.57.117.110/magazine/issue/2010/1-2/stoic-philosophy-and-the-profession-of-arms> (accessed 5 February 2010).

³⁵ Peter Singer, *Wired for War: The Robotics Revolution and Conflict in the 21st Century* (New York: Penguin Press, 2009), 308-309.

³⁶ *ibid.*, 298.

³⁷ *ibid.*, 307.

³⁸ *ibid.*, 311.

³⁹ *ibid.*

⁴⁰ Former CIA lawyer Vicki Divoll in Jane Mayer, "The Predator War," *The New Yorker*, 26 October 2009, http://www.newyorker.com/reporting/2009/10/26/091026fa_fact_mayer (accessed 5 March 2010).

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⁴⁴ Ex-Pakistani Army officer Talat Masood's concept, amplified by Singer: *Wired for War*, 310.

⁴⁵ Sharkey, interview with author, 11 December 2009.

⁴⁶ Kilcullen, *Accidental Guerrilla*, 286.

⁴⁷ *Ibid.*, 35, 38.

⁴⁸ Paul Starr, "The Easy War" *American Prospect* 14, no. 3 (2003), http://www.prospect.org/cs/articles?article=the_easy_war (accessed 27 April 2010).

⁴⁹ *ibid.*, 14.

⁵⁰ *ibid.*

⁵¹ Christopher Coker, *Humane Warfare* (New York: Routledge, 2001), 117-121.

⁵² Author's emphasis.

⁵³ Starr, "The Easy War".

⁵⁴ For example see: Coker, *Humane Warfare*, 150.

⁵⁵ Kenneth Anderson, "Predators over Pakistan," *Weekly Standard* 15, no. 24 (2010), <http://www.weeklystandard.com/articles/predators-over-pakistan> (accessed 27 April 2010).

⁵⁶ Bergen and Tiedemann, "The Drone War".

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⁵⁹ Amitai Etzioni, "Unmanned Aircraft Systems: The Moral and Legal Case," *Joint Forces Quarterly*

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⁶⁰ Mayer, "Predator War".

⁶¹ Daniel Byman, "Do targeted killings work," *Foreign Affairs* 85, 61 no. 2 (2006): 111.

⁶² An argument echoed in Air Vice-Marshal Jon Lamonte, "The Future of UAVs: Concepts and Considerations" <http://www.raf.mod.uk/role/thefutureofuav.cfm> (accessed 26 March 2010).

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The First Drone War: Air Power for Strategic Effect

By Flight Lieutenant Kenny Fuchter

Air power has had a bad press lately and yet a revolutionary air campaign of devastating effect has been ongoing, largely in the background. A campaign whose primary proponent is not an air force but a civilian intelligence agency, employing civilian contractors. Over the last four years, in support of a clear and consistently stated National Strategic Aim, the United States has systematically and relentlessly pursued and struck al-Qaeda from the air. In what can now be called the 'First Drone War', air power (primarily through the use of UAS conducting ISR and strike) has demonstrated stunning utility in support of a global comprehensive approach counter-terror campaign. Although controversial, the effects on al-Qaeda have been devastating, to the extent that the stated aim of defeating al-Qaeda is, according to official US public statements, within reach.

Introduction

*"We are at war. We are at war against a terrorist organization called al-Qaeda that has brutally murdered thousands of Americans, men, women and children, as well as thousands of other innocent people around the world. In recent years, with the help of targeted strikes, we have turned al-Qaeda into a shadow of what it once was. They are on the road to destruction."*¹
Deputy National Security Advisor for Homeland Security and Counterterrorism, John Brennan, 30 April 2012.

Air power has had a bad press lately. The debate over its efficacy and cost effectiveness has raged, with distinguished strategists such as Van Creveld even claiming that air power is on the wane.² A few authors, such as McKenzie, have robustly countered such assertions,³ citing the success of air power in the intervention in Libya. Meanwhile, largely in the background, a revolutionary air campaign of devastating effect has been ongoing. An air campaign that could arguably be described as one of the most significant in history, whose primary proponent is not an air force but a civilian intelligence agency employing civilian contractors.⁴ Over the last ten years and more significantly in the last four, the United States has systematically and relentlessly pursued and struck al-Qaeda from the air, not just in Pakistan and Afghanistan but also in Yemen and Somalia. In what can now be called the 'First Drone War', air power (primarily through the use of Unmanned Aerial Systems (UAS) conducting Intelligence Surveillance and Reconnaissance (ISR) and strike) has demonstrated stunning utility in the context of a global counter-terror campaign.

The majority of what little debate there has been on the air campaign has typically focused on its legality, morality, wisdom and the negative impact it is having, especially in Pakistan.⁵ Rather than engaging in that heated debate this article aims to analyse the air campaign from an air power perspective, examining the underlying US government strategy, the scale of the strikes and the impact they have had on al-Qaeda. Although a clandestine campaign, since April 2012 the US administration has made increased attempts at transparency, largely in an attempt to counter negative publicity. Public statements from key stakeholders such as President Obama, Attorney General Holder, Secretary of Defence Panetta and Chief Counterterrorism Advisor to the President John Brennan give us for the first time a direct insight into the policy and strategy behind the strikes. The link between policy and any application of force is of key importance in assessing efficacy and these statements will be of critical importance in assessing whether this campaign has had strategic effect. The release of some of Bin Laden's letters in May 2012 from the material seized at his compound in Abbottabad,⁶ combined with al-Qaeda in the Arabian Peninsula's *Inspire* magazine has also allowed us for the first time to get an account of the impact of these 'drone strikes' from an al-Qaeda perspective.

The War that has to be Won

"It is time to turn the page. When I am President, we will wage the war that has to be won, with a comprehensive strategy with five elements: getting out of Iraq and on to the right battlefield in

Afghanistan and Pakistan; developing the capabilities and partnerships we need to take out the terrorists and the world's most deadly weapons; engaging the world to dry up support for terror and extremism; restoring our values; and securing a more resilient homeland." Senator Barack Obama (candidate for Democratic presidential nomination), 1 August 2007⁷

Air power, like any form of power, hard or soft, can only achieve strategic effect when clearly aligned in support of policy. Whilst it might still be possible to achieve significant operational or tactical effect when this is not the case, strategic impact will be impossible. The current campaign of 'targeted strikes' has been so successful precisely because it is integrated into a clear, well-understood,⁸ consistent, and comprehensive US government policy. Understanding the policy driving the air campaign makes it possible to appreciate its efficacy.

The behaviour of states is often examined under two competing analytical paradigms of international relations; Rationalism and Constructivism.⁹ The Rationalist approach suggests, by reference to goal seeking behaviour, that states pursue their interests according to the "logic of expected consequences";¹⁰ adopting policies where the benefits outweigh the costs.¹¹ Constructivists assume that states are social actors whose policy choices in international relations are affected by beliefs, expectations and interpretations.¹² These analytical approaches are especially relevant in understanding counter-terrorism. Here rationalists believe that a state will do what is in its best interest (i.e. to minimise or eliminate the threat); whilst constructivists would argue that any response would be defined by the social norms and interpretation of the nature of the threat and the appropriate responses.¹³ These two theories, often seen as competing, can be used together to understand the strategy that lies behind the current employment of air power against al-Qaeda and therefore why it has been successful.

The defining event in recent history remains 9/11, which has shaped US foreign policy throughout the 21st Century and will continue to do so for at least the next decade. Reference to 9/11 is repeatedly made by US policymakers when discussing targeted strikes. Constructivists would argue that to understand US strategy it is important to appreciate the impact that 9/11 continues to have. Driven by this devastating terrorist attack the rationalist aim for both US administrations since has been to minimise and eliminate the threat from al-Qaeda:

"We have got to defend the United States of America. That's our first responsibility". Leon Panetta, Secretary of Defense, 27 May 2012¹⁴

The method of achieving this changed significantly with the election of President Obama in 2008. Prior to his election he had noted in 2007 how his priority in power would be to tackle al-Qaeda by getting out of Iraq and "waging the war that has to be won" in Afghanistan and Pakistan.¹⁵ This strategy has been consistently repeated in subsequent speeches and policy documents over the last four years:

"Our overarching goal remains the same: to disrupt, dismantle and defeat al-Qaeda in Afghanistan and Pakistan, and to prevent its capacity to threaten America and our allies in the future." President Obama, West Point, 1 December 2009¹⁶

"We will disrupt, dismantle and defeat al-Qaeda and its affiliates through a comprehensive strategy." US National Security Strategy, 2010¹⁷

In doctrinal terms this can be translated into the National Strategic Aim.¹⁸ This aim is normally expressed in terms of a desired outcome, in this case succinctly by President Obama:

"Our goal is to destroy al-Qaeda." President Obama, Bagram Airfield, 1 May 2012¹⁹

Clear and unwavering political strategic direction is essential in ensuring the success of any application of force. During the Obama administration this has been the bedrock of the campaign's efficacy. In UK doctrine the identification of the National Strategic Aim allows a clear understanding of the problem by key stakeholders (in this case the CIA and the Department of Defense (DoD)) and allows analysis of two key campaign-planning concepts: the desired campaign end state and associated Centre(s) of Gravity.²⁰ The campaign end state is clear: the defeat of al-Qaeda and denial of the opportunity to rebuild.²¹ Centre of gravity analysis seeks to determine the relative strengths and weaknesses of the principal protagonists. It complements the manoeuvrist approach, which applies strength against vulnerabilities, seeking predominantly indirect ways and means to target the conceptual and moral components of an opponent's fighting power.²² Clausewitz, the originator of the centre of gravity concept, noted that in an 'insurrection' the centre of gravity lies in the 'person of the chief leader' against whom persistently repeated concentrated blows should be directed.²³ It has been suggested that al-Qaeda has three clear centres of gravity, two of which are of primary significance for the air campaign.²⁴ It is evident that the strategic centre of gravity lies in the senior leadership, often known as al-Qaeda Core or al-Qaeda Central and based largely in the tribal areas of Pakistan.²⁵ It has also been argued that another Centre of gravity consists of al-Qaeda's middle management who provide the vital link between the top of the organisation with the grass roots and therefore make it possible for al-Qaeda to function as a coherent and operationally effective entity, especially in Europe and North America. The third and final Centre of gravity are the grass-roots themselves including those who are inspired by al-Qaeda and often 'participate' through Internet forums ("jihobbyists"), low level members of jihadist cells and their leaders; and those who may have been to a training camp and returned home without retaining lasting links to the leadership.²⁶ This last is not particularly suited to the application of military force but falls to others, under the comprehensive approach, to engage. The senior leadership and middle managers, who can roughly be equated to a strategic and operational centre of gravity, are however vulnerable to the application of military force.

The Utility of Air Power

"Very frankly, it's the only game in town in terms of confronting or trying to disrupt the al-Qaeda leadership". Leon Panetta, Director CIA, 18 May 2009²⁷

Al-Qaeda's core senior leadership has largely been based in an area described by US intelligence agencies as "the most dangerous region on earth"; the remote Pashtun tribal areas of Pakistan known as the FATA (Federally Administrated Tribal Area).²⁸ In this inaccessible, mountainous, autonomous region al-Qaeda, given sanctuary by the Taliban and various other militant organisations, was able to regroup and resume plotting and training for further attacks against the West following their expulsion from Afghanistan in 2001.²⁹ With the Pakistani government unwilling and unable to pursue al-Qaeda and the Taliban in this region the options for the US to tackle this centre of gravity are limited. Air power proponents will quickly realise that the key characteristics of air power - height, speed, reach, ubiquity, agility and concentration³⁰ make it ideal for such a task. This suitability is emphasised when one takes into account that one of the critical vulnerabilities of al-Qaeda is its inability to counter such a threat. In April 2012 US Counterterrorism Chief John Brennan outlined exactly why the US administration believed the use of air power was so wise:

- The ability to fly hundreds of miles over treacherous terrain, strike with astonishing precision and return to base.
- The ability to react quickly to small windows of opportunity.
- The reduction or elimination of danger to US personnel.
- The reduction in the danger to innocent civilians through collateral damage by utilising 'surgical' precision.
- Increased situational awareness of the target and its surroundings.
- No requirement for large scale military deployment on the ground which plays into al-Qaeda's hand of drawing the US into long, drawn out costly wars and inflames anti-American sentiment.³¹

The primary tool utilised to exploit the asymmetric advantage of air power in this campaign has been the Unmanned Aerial Vehicle (UAV) or Remotely Piloted Aircraft (RPA);³² the ubiquitous 'drone' of popular parlance. Employed by the CIA in Pakistan, utilising private contractors,³³ and primarily by the DoD elsewhere, the two key roles of the RPA have been ISR and strike. Whilst details of the programme remain closely held, despite recent improvements in transparency, the scale of this air operation is difficult to accurately assess. One measure that can be used as an indicator is the number of strikes that have been conducted. In the absence of official figures there are three primary sources, drawn from a wide range of open source reporting, that provide statistics and analysis of drone strikes: *The Bureau of Investigative Journalism*,³⁴ *The Long War Journal*³⁵ and the *New America Foundation*.³⁶ The figures provided suggest that there have been up to 337 strikes in Pakistan, 45 in Yemen and 9 in Somalia until 2 August 2012. These figures can only be approximate as verification is largely impossible. It is possible that there may have been more unreported strikes and some

may have been conducted by conventional aircraft or possibly even by third parties. They do however give an indication of scale and what is clear is that this is a significant air campaign.

Figure 1 below shows a comparison of the number of targeted strikes (to date) with the number of strike sorties carried out by the Royal Air Force in a number of recent major air campaigns. It is notable that the number of drone strikes has been almost half, one third and one quarter of the RAF's strike sorties in Op ALLIED FORCE (Kosovo 1999), Op TELIC (Iraq 2003) and Op ELLAMY (Libya 2011) respectively. Given the nature of those air-dominated campaigns this is significant although perhaps misleading. It is unknown how many UAV strike sorties led to each strike so this is not quite a direct comparison.³⁷ Perhaps more significantly during Op ELLAMY RAF strike sorties represented between half and two-thirds of all sorties conducted.³⁸ It is likely that the vast majority of UAV sorties against al-Qaeda will be ISR, with a much smaller percentage being strike. It is therefore possible that the total number of UAV sorties conducted to date could be in the tens of thousand across all theatres. As an indication of scale, when compared to the RAF's 3000 plus total sorties for Op ELLAMY, it highlights that this represents a major air campaign.

Campaign	First Drone War	Op ALLIED FORCE	Op TELIC	Op ELLAMY
Strike Sorties	391 ³⁹	1008 ⁴⁰	1353 ⁴¹	2000 ⁴²

Fig.1 Drone strikes (to 2 August 2012) compared to RAF strike sorties

What is also clear is that the Obama Administration has consistently followed its own stated policy. Figure 2 below shows the number of drone strikes in Pakistan since 2004 and what is clear is the significant increase in strikes following Obama's election in 2008. Indeed there were more in his first year in office, 2009, than there had been in total to that point. Selection and maintenance of the aim is a fundamental principle of war and key to any successful application of force.⁴³ In this case it has allowed the application of air power in a precise targeted campaign to enable the desired end state.

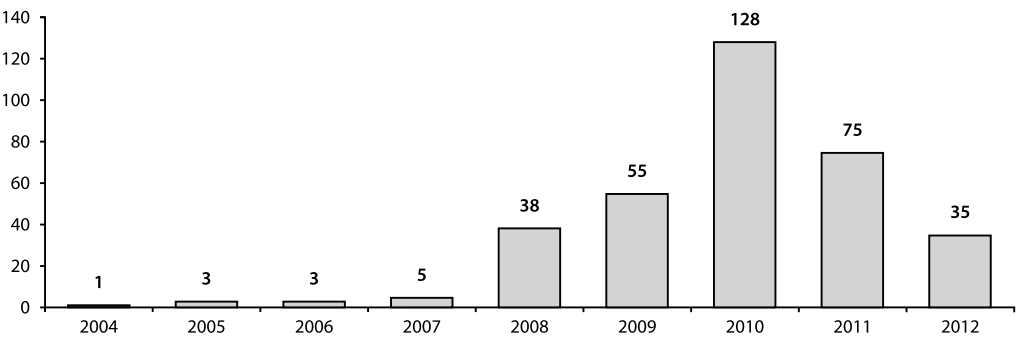


Figure.2 Drone Strikes in Pakistan (from The Bureau of Investigative Journalism Data)⁴⁴

In the absence of official figures it is impossible to know how many actual aircraft have been involved in this campaign, especially those operated by the CIA. In February 2009, prior to a move to airfields in Afghanistan, three MQ-1 Predator were seen on Google Earth imagery at Shamsi Air Base in Pakistan⁴⁵ and others were known to operate at Jacobabad in Baluchistan.⁴⁶ Further detail is unavailable. The United States Air Force (USAF) was globally able to operate 38 Combat Air Patrols (CAPs) by either MQ-1 Predator or MQ-9 Reaper at any one time in 2009 and aims to be able to operate 65 by 2014.⁴⁷ Only a fraction of these will be employed on counter-terrorism but the numbers are impressive. In 2012 the DoD has approximately 340 Unmanned Aerial Systems of the R/MQ-4 Global Hawk, MQ-9 Reaper and MQ-1 Predator class at its disposal. It aims to increase this to 650 by 2021.⁴⁸ DoD spending on UAS has increased from \$284 million in FY2000 to \$3.3 billion in FY2010.⁴⁹ This increase in investment and therefore capability is one of the key factors behind the success of the air campaign against al-Qaeda.

The Impact on al-Qaeda

"But over the last three years, the tide had turned. We broke the Taliban's momentum. We've built strong Afghan security forces. We've devastated al-Qaeda's leadership, taking out over 20 of their top 30 leaders. And one year ago, from a base here in Afghanistan, our troops launched the operation that killed Osama bin Laden. The goal that I set – to defeat al-Qaeda and deny it a chance to rebuild – is now within our reach". President Obama, 1 May 2012⁵⁰

The application of air power on the scale outlined above, in support of a strategic goal, has had a devastating impact on al-Qaeda. The two relevant centres of gravity, senior leadership and middle management in Pakistan, have suffered significant attrition from which many in US government believe, in public at least, they will be unable to recover.

Arguably the greatest blow to al-Qaeda was the death of its founder and leader of the global jihadist movement Osama bin Laden in 2011.⁵¹ It is worth noting that although not killed in a drone strike the Special Forces raid was only possible thanks to another of the key roles of air power, air mobility. However, there have been a significant number of other senior leadership figures killed by drone strikes and the cumulative effect of this has been devastating. The *New America Foundation* has calculated that 43 senior al-Qaeda and militant leaders have been killed by drone strikes since 2004, 40 of those since 2008.⁵² Considering that the US government has consistently estimated the number of al-Qaeda leaders and operatives in Pakistan at between 300 and 400⁵³ this is a significant casualty rate. Examples of some of those killed in just the last fourteen months reveal the scale of the problem facing al-Qaeda:

Ilyas Kashmiri (killed June 2011) Senior militant commander and al-Qaeda external operational planner.⁵⁴ Leader of Huji⁵⁵ and al-Qaeda in Kashmir.⁵⁶

Atiyah Abd al-Rahman (killed August 2011) al-Qaeda operations chief who succeeded Ayman al-Zawahiri as Deputy Leader after bin Laden's death.⁵⁷

Badr Mansoor (killed February 2012) Leader of al-Qaeda in Pakistan and a key link to the Taliban and Pakistani militant groups.⁵⁸

Abu Yahya al-Libi (killed June 2012) Senior leader and Islamic scholar. Replaced al-Rahman as al-Qaeda second in command. One of the last senior leaders with global jihadi credentials.⁵⁹

It is not just al-Qaeda leadership that has been targeted but also other militant groups who have links to them or who conduct attacks in Afghanistan. These include the Taliban, Islamic Movement of Uzbekistan, Haqqani Network and the Tehrik-i-Taliban Pakistan (TTP).⁶⁰

Effects have not just been felt at senior level. Although only details of the deaths of senior leaders are confirmed by the US it is likely that the bulk of the strikes are aimed at the layer of middle managers, planners and facilitators already identified as a critical centre of gravity.⁶¹ General Stanley McChrystal, the former Commander of US Forces in Afghanistan, highlighted the importance of this part of the network:

*"What I have come to believe is that you take the middle of the network – experienced professionals – you attack them, you capture, you kill and you turn as many of them as you can, and you cause the network to collapse on itself."*⁶²

Figures vary but the *Bureau of Investigative Journalism*, *The Long War Journal* and the *New America Foundation* estimate that there have been between approximately 1500 and 2500 al-Qaeda and other extremist operatives killed to date by drone strikes in Pakistan.⁶³ Whilst there is much debate over the number of civilian casualties even the lower figure of 1500 militants represents considerable attrition, much of which will be felt at the mid-level. Such has been the effect of these strikes that as early as 2009 the then CIA Director Leon Panetta stated that the airstrikes had been "very effective" noting that al-Qaeda's leaders had come to view Pakistan's tribal areas as "neither safe nor a haven".⁶⁴

In material seized from bin Laden's compound in Abbottabad (and released by the US in May 2012) he confessed to the strikes bringing 'disaster after disaster'⁶⁵ and recommended a number of extra security measures to try and avoid surveillance, even if that meant slowing down the 'work'.⁶⁶ Such was his concern he stressed the importance of moving the "brothers" occupying leadership positions out of Waziristan and "away from aircraft photography and bombardment".⁶⁷ He was worried about the 'rise of lower leaders who are not as experienced' and how this would lead to the repetition of mistakes.⁶⁸ John Brennan notes that morale amongst al-Qaeda is reportedly low with intelligence indicating that some members are giving up and returning home, whilst attracting new recruits is a struggle:

"For all these reasons, it is harder than ever for al-Qaeda core in Pakistan to plan and execute large-scale, potentially catastrophic attacks against our homeland. Today, it is increasingly clear

that compared to 9/11, the core al-Qaeda leadership is a shadow of its former self. Al-Qaeda has been left with just a handful of capable leaders and operatives, and with continued pressure is on the path to its destruction. And for the first time since this fight began, we can look ahead and envision a world in which al-Qaeda core is simply no longer relevant.” John Brennan, 30 April 2012⁶⁹

In the UK public statements by intelligence chiefs including the Director General of the Security Service reflect this assessment:

Bin Laden is dead, al-Qaeda’s senior leadership is under serious pressure and there hasn’t been a major attack here for seven years. Jonathan Evans, 25 June 2012⁷⁰

Beyond Pakistan

“Beyond Pakistan there is a core of terrorists – probably in the tens of thousands – who have made their choice to attack America. So the second step in my strategy will be to build our capacity and our partnerships to track down, capture or kill terrorists around the world, and to deny them the world’s most dangerous weapons”. Senator Barack Obama, candidate for Democratic presidential nomination, 1 August 2007.⁷¹

It is not just in Pakistan where the effects of this campaign are felt. The decline of al-Qaeda Core in Pakistan has coincided with the rise of the affiliates, especially al-Qaeda in the Arabian Peninsula (AQ-AP).⁷² Repeated attempts by AQ-AP to attack the West and aircraft in particular, as evidenced by the underpants bombs and the bomb found in a printer cartridge at East Midland Airport has seen the group rise to the top of the CT agenda. As a result in Yemen there have been possibly as many as 45 strikes against AQ-AP, 28 of which have come in the first eight months of 2012.⁷³ Figures again vary with between 273 and 813 militants reported killed by *The Bureau of Investigative Journalism*⁷⁴ and *The Long War Journal*.⁷⁵ Even taking the lower estimate this is a significant level of attrition from a group that was assessed by the US as consisting of ‘more than a thousand’ in April 2012.⁷⁶ They have also suffered the recent loss of key leaders including:

Fahd al-Quso (killed May 2012) Senior operational planner who had plotted to blow up a passenger plane in 2012 and was involved in the attack on the USS Cole.⁷⁷

Anwar al-Awlaki (killed September 2011): Radical American Muslim cleric and leader of external operations who was responsible for planning and directing terrorist attacks against the US⁷⁸ including the 2009 ‘underpants’ plot and was linked to a number of other attacks including the Fort Hood shooting.⁷⁹ A global figure he was also linked to the Rajib Karim British Airways plot in the UK.⁸⁰ His English language rhetoric and publications inspired extremists in the West including in the UK as evidenced by the stabbing of MP Stephen Timms by Roshonara Choudray.⁸¹

The level of attrition in a relatively short period of time has had a considerable impact in terms of both key commanders and capabilities.⁸² AQ-AP's English language magazine *'Inspire'* can provide us with a unique and direct insight into this. Issue 6 of *Inspire*,⁸³ released in the summer of 2011, covers in great detail the death of bin Laden where it is noted that they *'lament the loss of a great leader'*.⁸⁴ Significantly there is also a Shuhada (or Martyr) special in the magazine which the editor introduces whilst discussing the fighting in Yemen:

*"But there is a price for everything. During these battles we have lost some of our dear brothers; brothers from the first generation, the ones who were with us from day one. You will read about some of these martyrs in this issue."*⁸⁵

Of the six senior operatives whose obituaries follow, two including Abu Ali Al-Harithi (The Veteran Lion) were killed by drone strikes and two others had survived strikes prior to their death. Looking beyond the text can provide an even greater indication of the impact of the air campaign a year on from publication. In addition to the obituaries, including of the two individuals killed by drone strikes, the magazine includes articles by Bin Laden, Abu Yahya al-Libi and Samir Khan and an invitation to write to Anwar al-Awlaki.⁸⁶ Apart from bin Laden, whose death was enabled by air power, all the rest have subsequently been killed in targeted strikes. Not only is air power having an impact on key leadership but it is also critically impacting the ability of al-Qaeda and the affiliates to deliver its message to its key audience. The inability of al-Qaeda to counter this crippling campaign is illustrated by a story about one of the senior operatives in his obituary. When a group of AQ-AP operatives were narrowly missed by a drone strike Ali Saleh apparently drew his jambia (Yemeni dagger) and raised it above his head screaming his name.⁸⁷ He had no other way of countering the asymmetric advantage that the UAV possessed. It is little wonder perhaps that Leon Panetta in his first speech after becoming Secretary of Defence in July 2011 noted that *"we have them on the run"* and that *"we are within reach of strategically defeating al-Qaeda"*.⁸⁸

Illegal use of Air Power?

"The US can no longer speak with moral authority on human rights". Former President Jimmy Carter. June 2012⁸⁹

'But we must recognise that there are instances where our government has the clear authority – and I would argue, the responsibility – to defend the United States through the appropriate and lawful use of lethal force.' Attorney General Eric Holder, 5 March 2012⁹⁰

Legality (or at least the appearance of) is of critical importance in contemporary conflict, especially in the West. The use of any strategy, tactics or weapons seen as illegal is unsustainable in the long term. To extract relevant lessons from the current drone campaign it is necessary to understand the arguments surrounding its legality, especially as proponents of air power. Targeted strikes have attracted considerable controversy. Much of the opprobrium, which comes from a broad spectrum that includes human rights groups, legal scholars and

even former Presidents, focuses on the legality and ethical nature of drone strikes, which are often seen as extrajudicial assassinations that violate human rights, violate state sovereignty, stain US moral standing and fuel extremism.⁹¹ In light of this criticism, and in an attempt to counter what has been to date a largely one-sided debate, the US government has recently outlined the legal basis it believes justifies the use of air power in this manner.

The Attorney General Eric Holder has highlighted that in terms of International Law the US is at war with al-Qaeda, the Taliban and associated forces as a result of 9/11.⁹² Any state is also entitled to use force consistent with its inherent right of self-defence.⁹³ Because the US is in an armed conflict they are authorised to take action against enemy belligerents under international law.⁹⁴ There is nothing in international law that bans the use of UAS for this purpose and nothing that prohibits the use of lethal force away from an active battlefield, at least when the country involved consents or is unable or unwilling to take action against the threat.⁹⁵ There have been very public protests by elements of the Pakistani government to placate their domestic audience but it is unclear whether they have given approval in private. In Yemen the US work closely with the government on counter-terrorism and in Somalia the Somali Transitional National Government control little beyond the immediate environs of the capital Mogadishu.

The legality of targeted strikes under US Domestic Law is also clear according to both Holder and Brennan. The US Constitution empowers the President to protect the nation from imminent threat of attack. The Authorisation for Use of Military Force (AUMF), passed by Congress after 9/11 authorised the President to 'use all necessary and appropriate forces' against those nations, organisations and individuals responsible for 9/11. There is nothing that restricts that to Afghanistan.⁹⁶ Holder highlighted that even targeting a US citizen (such as Anwar al-Awlaki) would be lawful:

*"Let me be clear: an operation using lethal force in a foreign country, targeted against a US citizen who is a senior operational leader of al-Qaeda or associated forces, and who is actively engaged in planning to kill Americans, would be lawful at least in the following circumstances: First, the US government has determined, after a thorough and careful review, that the individual poses an imminent threat of violent attack against the United States; second, capture is not feasible; and third the operation would be conducted in a manner consistent with applicable law of war principles."*⁹⁷

Reference to law of war principles is significant when considering any use of air power in this context. There are four fundamental law of war principles that govern any use of force:

Necessity: The target must have definite military value.

Distinction: Only lawful targets i.e. combatants, civilians directly participating in hostilities and military objectives may be intentionally targeted.

Proportionality: Anticipated collateral damage must not be excessive in relation to the

anticipated military advantage.

Humanity: Requires the use of weapons that do not inflict unnecessary suffering.

Air power is possibly the only military capability that can successfully meet these principles in this scenario. Persistent ISR through the use of UAS helps to provide the best intelligence for planners to ensure that the conditions of necessity, distinction and proportionality are met. Effective ISR also enables precision strike with small munitions, thereby minimising collateral damage and civilian casualties as far as possible and ensuring that the principles of humanity are maintained. Despite criticism to the contrary, technologically advanced air power systems are probably the most ethical and legally compliant weapons available to the US in this regard.

A frequent complaint about drone strikes is that they are assassinations.⁹⁸ However, Holder points out that the term is loaded and misplaced. Assassinations are unlawful killings that violate criminal statutes and the US Executive Order specifically banning them. Targeted killings are not unlawful in US government eyes and therefore are not assassinations.⁹⁹ The specific targeting of senior leadership has long been a recognised and legal tactic in war, as the attack against Admiral Yamamoto and attempts against Field Marshal Rommel in the Second World War aptly demonstrate.

The attempt by the US to provide greater transparency only began in April 2012 and is ongoing. The CIA General Council has addressed Harvard Law School on 'the CIA and the Rule of Law' and a recent *New York Times* article has examined in depth the complex targeting and approval process, led by President Obama, for these strikes.¹⁰⁰ It was John Brennan who began the process:

"So let me say it as simply as I can. Yes, in full accordance with the law, and in order to prevent terrorist attacks on the United States and to save American lives, the United States Government conducts targeted strikes against specific al-Qaeda terrorists, sometimes using remotely piloted aircraft, often referred to publicly as drones. And I'm here today because President Obama has instructed us to be more open with the American people about these efforts". John Brennan, Assistant to the President for Homeland Security and Counterterrorism, 30 April 2012.¹⁰¹

Conclusion

The US campaign of targeted strikes against al-Qaeda has been controversial. Even distinguished counter-insurgency scholars such as Kilcullen have criticised the strikes as counter-productive especially in the FATA.¹⁰² However, this perhaps reflects some confusion over the nature of the campaign and some conflation between counter-insurgency and counter-terrorism. When recently asked if this strategy could work in Yemen without boots on the ground (commonly recognised as the critical element in any counter-insurgency campaign) the US Defence Secretary replied:

"The answer is yes, because very frankly, what we're targeting, the operations we're conducting, require the kind of capabilities that don't necessarily involve boots on the ground, but require the kind of capabilities that target those that we're after who are threats to the United States. That's what this mission is about. It isn't about getting into, you know, their tribal difference and controversies. It isn't about getting into a civil war. It's about going after those who threaten our country. That's what this mission is about." Leon Panetta, 27 May 12¹⁰³

The air campaign is a critical element in a comprehensive approach to 'disrupt, dismantle and defeat al-Qaeda and its affiliates'.¹⁰⁴ The Rationalist/Constructivist approach of the US government recognises the dangers of the negative impact on the people of Pakistan, whose hearts and minds represent a key battleground,¹⁰⁵ but driven by 9/11 the strategic priority is first to defeat al-Qaeda. The consistency of this strategy throughout the Obama administration has allowed air power to play a key role in supporting policy. The effects on al-Qaeda from the air power delivered ISR and strike have been devastating and relentless. In support of a clearly stated National Strategic Aim, al-Qaeda's two key centres of gravity, senior leadership and middle management have been eviscerated by the application of strength, in the form of air power, against their vulnerabilities, with stunning success.

In recent years, with the help of targeted strikes, we have turned al-Qaeda into a shadow of what it once was. They are on the road to destruction." John Brennan, 30 April 2012¹⁰⁶

Bernard Fall the renowned counter-insurgency strategist of the Vietnam War famously noted in 1964 that you cannot defeat an ideology with technology.¹⁰⁷ Whilst this remains true today what the drone campaign has demonstrated is that with the precise application of air power as part of a comprehensive approach, in support of a clear strategic aim, you can bring to the brink of defeat a global terrorist organisation who promote that ideology. The fact that such a campaign is conducted largely by a civilian intelligence agency makes it even more remarkable.

"The goal that I set – to defeat al-Qaeda and deny it a chance to rebuild – is now within our reach." President Obama, 1 May 2012¹⁰⁸

Notes

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² Martin Van Creveld, The Rise and Fall of Air Power, *RUSI Journal*, 156;3, June/July 2011, 48-54

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⁴ Brian G Williams, The CIA's Covert Predator Drone War in Pakistan, 2005-2010: The History of an Assassination Campaign, *Studies in Conflict and Terrorism*, No.33, 2012, 871

⁵ For example see Andrew Roe, 'Bugsplat' and Fallible Humans: the Hi-Tech U.S. Drone Campaign over North-West Pakistan, *Air Power Review*, 66-82

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⁹ James Fearon & Alexander Wendt, "Rationalism v. Constructivism: A Sceptical View," in W.Carlsnaes, T.Risse, and B.A.Simmons, eds., *Handbook of International Relations* (London: Sage, 2002)

¹⁰ Emanuel Adler, "Constructivism and International Relations," in W.Carlsnaes, T.Risse, and B.A.Simmons, eds., *Handbook of International Relations* (London: Sage, 2002) , 104

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¹³ Mariya Y Omelicheva "Combating Terrorism in Central Asia: Explaining Differences in Stats' Responses to Terror" in *Terrorism and Political Violence*, Volume 19, Fall 2007, Number 3, p375

¹⁴ Panetta ABC News 27 May 2012

¹⁵ Obama Wilson Center speech 2007

¹⁶ Speech by President Obama on *The Way Forward in Afghanistan and Pakistan* at West Point on 1 December 2009 available at www.whitehouse.gov/the-press-office/remarks-president-address-nation-way-forward-afghanistan-and-pakistan accessed on 29 August 2012

¹⁷ US National Security Strategy 2010, p4 available from www.whitehouse.gov/sites/default/files/rss.viewer/national_security_strategy.pdf accessed on 20 August 2012

¹⁸ Joint Doctrine Publication 01 2nd Ed 'Campaigning' 2008, 2-15, para 239

¹⁹ President Obama speech at Bagram Air Field 1 May 2012 from www.whitehouse.gov/the-press-office/2012/05/01/remarks-president-address-nation-afghanistan accessed on 14 Aug 12

²⁰ JDP 5-00, Campaign Planning, 2nd Edition, 2008, para 228.

²¹ Obama Bagram speech 2012

²² JDP 5-00, Campaign Planning, 2nd Edition, 2008, paras 228, 229

²³ Carl von Clausewitz, *On War*, (London, Penguin Classics, 1992) p390

²⁴ P Neumann, R Evans and R Pantucci, Locating al- Qaeda's Center of Gravity: The Role of Middle Managers, *Studies in Conflict and Terrorism*, No.34, 2011, 825-842

²⁵ *ibid* 827-8

²⁶ Neumann et al Locating al-Qaeda, p829

²⁷ Leon Panetta U.S. airstrikes in Pakistan called 'very effective' 18 May 2009 from CNN Politcs.com <http://edition.cnn.com/2009/POLITICS/05/18/cia.pakistan.airstrikes/> accessed 15 Aug 12

²⁸ Williams, The CIA's Covert Predator Drone War, 871

²⁹ *ibid* 872-873

³⁰ British Air and Space Power Doctrine AP3000 Fourth Edition, p16,17

³¹ Brennan Wilson Center speech 2012

³² Caitlin Harrington Lee, Remote Possibilities, *Janes Defence Weekly*, 1 August 2012, p24

³³ Xe formerly Blackwater, Williams, *The CIA's Covert Predator Drone War*, 877

³⁴ see www.thebureauinvestigates.com/category/projects/drones

³⁵ see www.longwarjournal.org

³⁶ see <http://counterterrorism.newamerica.net/drones>

³⁷ A strike sortie can be undertaken without actually conducting a strike. It is difficult to calculate any differences as the UAV sorties given the ability to conduct ISR and strike simultaneously are probably not categorised in such terms.

³⁸ Clare Taylor, *Military Operation in Libya*, House of Commons Library Standard Note SN/IA/5909, 24 October 2011 available at www.parliament.uk/Templates/Briefingpapers/Pages/BPPdfDownload.aspx?bp-id=SN05909

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⁴⁷ Harrington Lee p 31

⁴⁸ Jeremiah Gertler, U.S. *Unmanned Aerial Systems*, Congressional Research Service 3 January 2012, 4, available from www.crs.gov accessed on 28 August 12

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⁵¹ Brennan Wilson Center speech 2012

⁵² see <http://counterterrorism.newamerica.net/drones>

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- ⁶⁰ TTP – Tehrik-i-Taliban Pakistan - Movement of the Taliban in Pakistan. Long War Journal 'Senior al-Qaeda and Taliban Leaders killed in US air strikes in Pakistan 2004 – 2012, from www.longwarjournal.org/pakistan-strikes-hvts.php accessed on 15 August 2012
- ⁶¹ Neumann et al Locating al-Qaeda
- ⁶² Quoted in Neumann et al Locating al-Qaeda, 825
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- ⁶⁴ Leon Panetta, U.S. airstrikes in Pakistan called 'very effective', *CNN Politics.com*, 18 May 2009, from <http://edition.cnn.com/2009/POLITICS/05/18/cia.pakistan.airstrikes/> accessed 15 Aug 12
- ⁶⁵ Brennan Wilson Center speech 2012
- ⁶⁶ Harmony Document SOCOM-2012-0000019, quoted in *CTC SENTINEL*, Vol.5, Issue 5, May 2012, 29
- ⁶⁷ Harmony Document SOCOM-2012-0000019, quoted in *CTC SENTINEL*, Vol.5, Issue 5, May 2012, 30
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⁹⁵ Brennan Wilson Center speech 2012

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The Chinese threat to US interests in the Asia-Pacific Region and implications for US defence arrangements with Southeast Asia and Japan

By Wing Commander James Beldon

Despite the absence of major inter-state conflict in Southeast Asia for more than 30 years, there is growing concern that China's military expansion and the USA's desire to remain a major force in the region provide the potential for a military confrontation between the two major powers. America's recent 'Strategic Pivot' has signalled the USA's intent to realign its strategic focus to the Asia-Pacific region, but the Obama Administration has recognized that US aims cannot be met unilaterally. Hence, the USA is reinvigorating its defence ties with a number of Southeast Asian states, although, for reasons this paper examines, the USA continues to prefer bilateral rather than multilateral partnerships with its Asian allies. This paper examines China's strategy in the region, the catalysts that may lead to confrontation and the difficulties the USA has in developing its defence ties with its Southeast Asian partners and Japan.

Introduction

Although every post-War US Administration has declared the Asia-Pacific region to be a vital national interest, the Obama Administration's 'strategic pivot' represents a most significant juncture in US foreign policy. Despite the tightening fiscal constraints facing the US Government and the corresponding 2011 Budget Control Act, which has directed the Department of Defense (DoD) to make savings of \$487 billion from its baseline budget by 2021,¹ the US President has sought to reassure his Asia-Pacific allies that forthcoming US military cuts 'will not – I repeat – *will* not come at the expense of the Asia-Pacific.... Our enduring interests in the region demand our enduring presence in the region. The United States is a Pacific power and we are here to stay'.² Few observers dispute the notion that it is China's growing military capabilities and their uncertain role within an opaque Chinese strategy which serve as the rationale for the USA's strategic pivot. Although neither the US nor China seeks military confrontation, and despite the reassuring (yet possibly misleading) absence of major inter-state conflict in the Asia-Pacific region for over 30 years,³ a toxic cocktail of disagreements continues to threaten stability, from sovereignty disputes over coral archipelagos and natural resources to 'freedom of navigation' rights in the South China Sea, and the Sino-Taiwanese stand-off. This paper examines the emerging nature of the Chinese threat to US interests in the Asia-Pacific region and the ways in which the USA is reinvigorating its strategic relations with Southeast Asian states and Japan to safeguard its vital national interests there. This paper concentrates on the issues posing the greatest risk of *direct* military confrontation between the USA and the People's Republic of China (PRC) in Southeast Asia, including the South China Sea and Taiwan. For the purposes of this essay, Southeast Asia is defined as the Association of South East Asian Nations (ASEAN) member states plus Taiwan. Discussion of Japan is included owing to the pivotal strategic role it plays in US defence planning in Southeast Asia and the Western Pacific. Owing to the constraints imposed on essay length, explicit examination of the issues concerning the Korean Peninsula is outside the scope of this paper.

In dealing with the Chinese challenge, the USA has recognized the inadequacy of pursuing a unilateral strategy, a luxury that has long since passed, even for the World's most powerful nation. Hence, a key pillar in the USA's strategy in addressing the security challenges it faces in the region is its reinvigoration of established alliances and its desire to develop new strategic partnerships with emerging powers. In adopting such a strategy, the USA is consciously repositioning from a stance of dominance to leadership, a shift emphasized by the DoD's January 2012 document entitled 'Sustaining U.S. Global Leadership',⁴ which repeatedly advocated increased US engagement with regional partners to address common security interests. The ambiguities surrounding the PRC's long-term strategy worry many of China's neighbours, which share the USA's concern that the opacity of Chinese defence policy belies China's proclaimed 'peaceful development'. Nevertheless, although many believe that the USA's enhanced military posture in the region is a stabilizing factor, it could be argued that the 'strategic pivot' could also foment escalatory behaviour, with the unintended consequence

that China will use the US strategic shift as a pretext to justify accelerating its own military capabilities and heightened assertiveness. Nevertheless, no state in the region – except China – views the USA as a threat. Conversely, few states have similarly benign appreciations of China, whose aggressive actions towards Japanese, US,⁵ Philippine and Vietnamese shipping in the South and East China Seas have been clearly at odds with the 1982 UN Convention on the Law of the Sea. Additionally, China's bellicose behaviour over sovereignty of the Spratly, Paracel and Diaoyu/Senkaku Islands casts doubt over the PRC's assertion that it will pursue a 'foreign policy of peace and a national defense policy that is defensive in nature'.⁶ It is important, therefore, that the perceived military threat from an assertive China is examined before looking more closely at how the USA and its allies are seeking to address it.

China's Military Rise

During President Hu Jintao's state visit to the USA in January 2011, President Obama declared:

'We welcome China's rise. I absolutely believe that China's peaceful rise is good for the world, and it's good for America. ... We just want to make sure that that rise occurs in a way that reinforces international norms and international rules, and enhances security and peace, as opposed to it being a source of conflict either in the region or around the world.'⁷

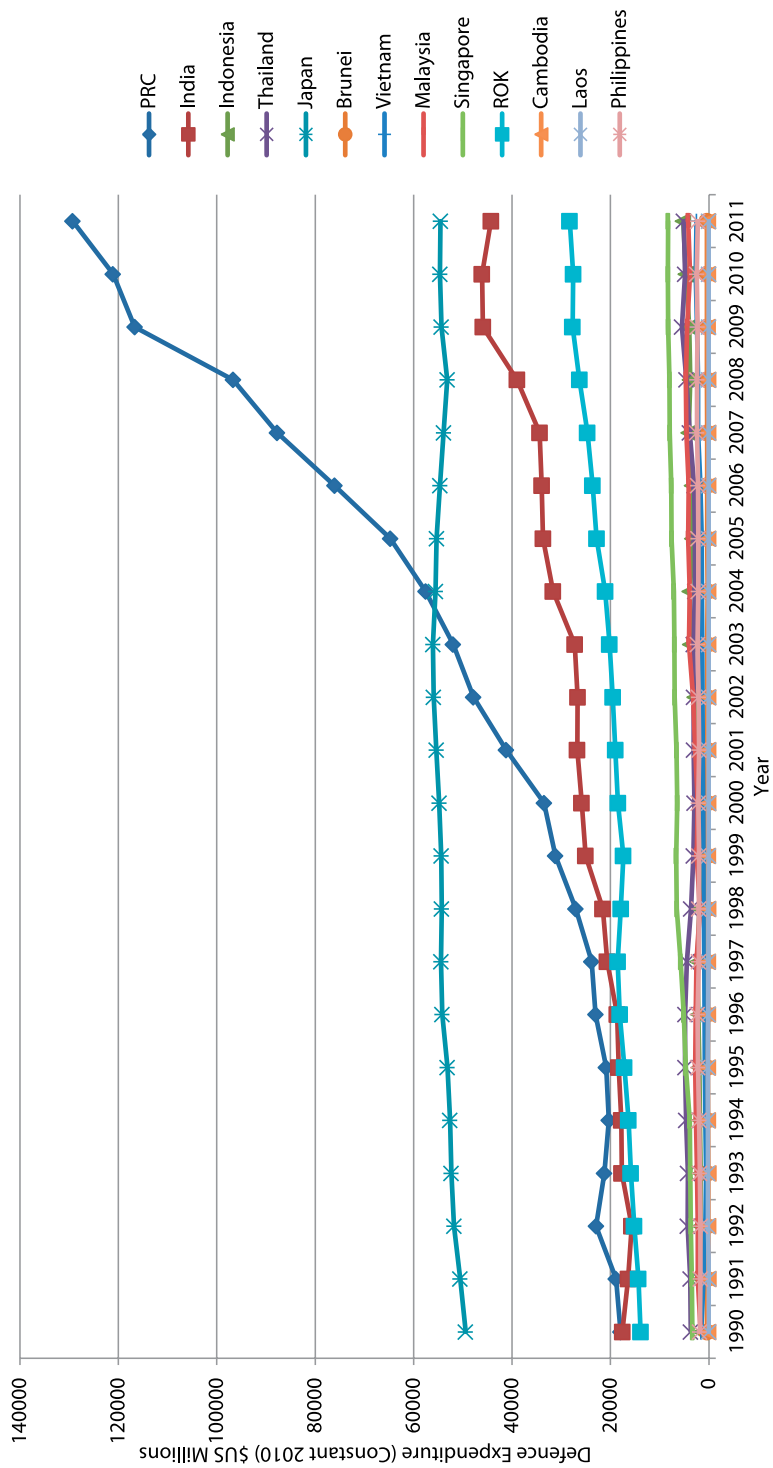
Echoing President Obama's declaration, the Pentagon's 2011 Annual Report to Congress on the PRC's military developments stated: 'The United States welcomes a strong, prosperous, and successful China that reinforces international rules and norms and enhances security and peace both regionally and globally.'⁸ But this apparent outbreak of US munificence towards China seems disingenuous in a document that devotes its remaining 89 pages to an extraordinarily detailed (for an unclassified document) description of the threats that the DoD perceives the PLA poses to US national security. With this factor in mind, the Report's opening remarks indicate two things: first, that the USA does *not* expect China to reinforce international rules and norms; second, that a strong China which does not meet the USA's expectations with regard to 'international rules and norms' will be *unwelcome* and treated as a threat. The PRC is well aware that its rise is inducing fear and mistrust, causing it to remark in its 2010 'National Defense of China' white paper that 'Suspicion about China, interference and countering moves against China from the outside are on the increase.'⁹ Quite so: the Pentagon warned that 'China's modernized military could be put to use in ways that increase China's ability to gain diplomatic advantage or resolve disputes in its favor',¹⁰ and that 'Beijing is developing capabilities intended to deter, delay, or deny possible U.S. support for the island [Taiwan] in the event of conflict',¹¹ an important issue to which we will return.

The rapid rise of China's economy has been the key enabler behind its military expansion. But the overall scale of China's military spending is hard to assess given that its defence budget announcements notoriously lack transparency. On March 4, 2012, PRC spokesman Li Zhaoxing announced that the PRC's 2012 Defence Budget was set to rise by 11.2% to 670.3

billion Yuan (US \$106 billion).¹² The 11.2% increase in spending is more notable than the overall spending total, which many observers, including the Pentagon, assess as being a gross and deliberate understatement. But the Pentagon's estimates seem barely more credible than the PRC's official statements: in 2011, the Pentagon assessed that the PRC's military spending for 2010 was approximately US \$160 billion¹³ (almost double the PRC's stated expenditure of US \$81.5 billion for the same period), reflecting a Pentagon tendency to exaggerate the perceived threat from China in order, it may be concluded, to secure increased Congressional funding. Given the PRC's vested interest in understating its defence expenditure and the Pentagon's desire to exaggerate it, it is fair to assume that the true figure lies somewhere in between. The independent Stockholm International Peace Research Institute's (SIPRI) data seem more credible than either the PRC's or the Pentagon's, because SIPRI universally applies the same rigorous criteria to its estimates of each state's defence expenditure. Although SIPRI's *absolute* figures are open to debate, the internal consistency of its approach yields an accurate indication of *relative* levels of states' defence expenditure over time, this temporal element also providing a useful illustration of rates of change of expenditure.¹⁴ SIPRI states that its estimates of Chinese defence expenditure have tended to be slightly more than 50% higher than the PRC's official figures, but SIPRI's figures were recently given enhanced substantiation through the leaked revelation by a PLA major general that Chinese defence spending was 1.7 times the official figure,¹⁵ contradicting Li Zhaoxing's mantra that 'There is no such thing as a so-called hidden military expenditure in China.'¹⁶ There is general agreement, however, that China's defence expenditure is rising, and rising fast – indeed, increases in defence expenditure have outstripped GDP growth for the past 3 years. Figure 1 (page 39) shows the rapid acceleration of Chinese defence expenditure since 1990 compared with India, Japan, the Republic of Korea and the ASEAN member states (except Myanmar).¹⁷ Between 1995 and 2011, China's defence expenditure more than doubled every 6 years, whereas its neighbours' defence budgets remained comparatively minuscule (ASEAN states), stable (Japan) or modestly increased (India and the ROK), albeit recent arms purchases indicate that China's neighbours are at last beginning to respond to the perceived rising threat posed by China, a matter which will be explored later in the paper.

Figure 2 (page 40) shows that, based on the assumptions that the PRC's defence expenditure will rise by an average of 10% per annum (slightly lower than recent annual rises) and that the US DoD carries out the US\$487 billion Budget Control Act savings in full and maintains a steady trend of budget increases thereafter, China would supersede the USA's defence expenditure by 2029, sooner if, as seems likely, further spending cuts are imposed following Congress's failure to reach a deficit reduction plan last year. However, when considering the scale of China's nascent military challenge, a number of important factors should be borne in mind. First, China's worldwide military commitments are extremely modest compared with those of the USA's, and although China is beginning to develop tell-tale expeditionary capabilities such as aircraft carriers,¹⁸ its commitments do not look likely to expand to the same scale as the USA's in the near to medium terms. Secondly, coupled with the seemingly inexorable growth in the PRC's military budget is the associated 'multiplying factor' of 'Purchasing Power Parity (PPP)';¹⁹

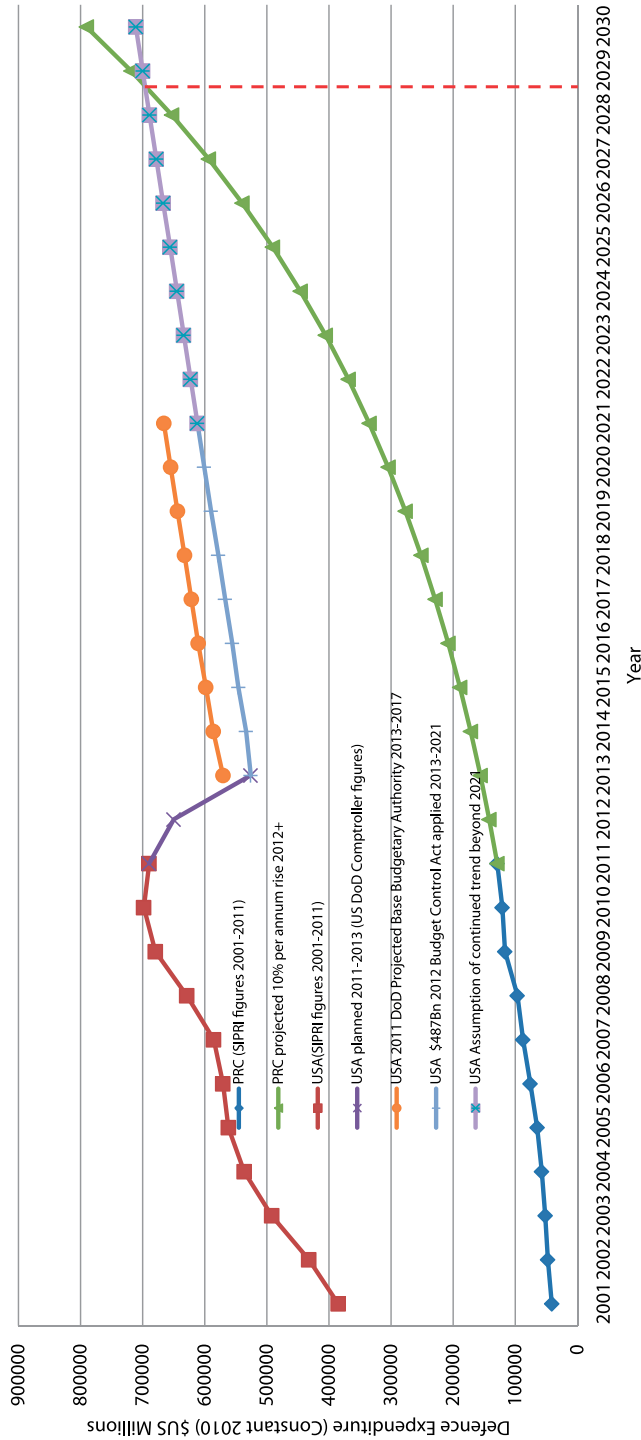
Figure 1: Defence Expenditure (Constant 2010) \$US Millions



Notes:

1. Figures taken from SIPRI's Military Expenditure Database 2012.
2. Figures for DPRK and Myanmar unavailable; figures for Vietnam not available for period 1995-2002 (so graph is extrapolated between 1994 and 2003); figures not available for Laos for periods 1990-1991 and 2011.

Figure 2: Historical and Projected US and PRC Defence Expenditure
(Constant 2010) \$US Millions



Notes:

1. For the period 2001-2011, figures have been taken from SIPRI's Military Expenditure Database 2012.
2. SIPRI estimated US defence spending to be US \$687.105 billion for 2010. US Congress approved a near identical budget level, US \$680 billion, i.e. within 1% of SIPRI's estimate. (Roxanna Tiron, "Senate OKs defense bill, 68-29," The Hill (October 22, 2009), <http://thehill.com/homenews/senate/64377-senate-to-vote-on-defense-bill> (accessed March 19, 2012). Hence, given the coherence between the SIPRI and US DoD figures for US Defence Expenditure, and the absence of SIPRI future forecasts, the US DoD projected budgets for 2012-2013 are assumed to be compatible with the SIPRI historical figures shown for the period 2001-2011.
3. Projected US Figures for the period 2012-2021 derived from US DoD Comptroller's "FY 2013 DEPARTMENT OF DEFENSE BUDGET SUMMARY - FY 2011 Actual Base and OCO, FY 2012 Appropriated Base and OCO, FY 2013 Base Request-TOTAL OBLIGATIONAL AUTHORITY, BUDGET AUTHORITY, AND OUTLAYS," DoD (February 2012), http://comptroller.defense.gov/defbudget/fy2013/FY2013_Financial_Summary_Tables.pdf.

which some commentators, such as John K. Tcakic Jr, have used to suggest that Chinese Defence expenditure is *effectively* much greater than any official figures suggest.²⁰ PPP acts at odds with the assertion recently made by the Chinese Ambassador to London that, 'At a per head level, China's defence spending is even lower [than the UK's or the USA's]. We are only 1/38 of America and 1/20 of Britain.'²¹ Thirdly, the well-publicised issue of the undervaluation of the Renminbi may mean that Chinese defence spending is actually much higher than any official figures propose. However, to put the current Chinese defence budget into perspective, US defence spending is currently more than five times greater than the PRC's,²² and the USA maintains a comfortable technological lead. But the gap is tightening in overall terms, and in the Western Pacific region specifically. So, although the US defence budget currently exceeds the combined total of the next 16 highest national defence budgets (including China's),²³ the rate of increase in China's defence expenditure and the projection based on Figure 2 that it could well overtake the US by 2029 begs the obvious question: 'To what end?' It is neither the rate of budgetary increase, nor necessarily the sophisticated military capabilities that such budgetary increases provide for, that cause the USA and its allies the most concern: it is the opaque strategy that underpins such developments.

China's Military Strategy

The PRC's biannually produced 'China's National Defense'²⁴ white paper has historically revealed little of substance regarding specific military capabilities or the strategy underpinning their development, despite repeated assertions of 'openness'.²⁵ Indeed, the 2010 paper follows the well-established trend of PRC governmental output in extolling the virtues of its self-proclaimed 'peaceful development' and emphasises its commitment to UN operations and humanitarian, disaster relief and anti-piracy missions. Nevertheless, open source material regarding the PLA's 'high-end' capabilities and dispositions reveals some worrying aspects of China's military strategy.

An assessment of the PRC's front-line capabilities indicates that the PLA is principally evolving into a premier regional force, with an aspiration in the longer term to develop a global expeditionary capability. Indeed, the procurement of the ex-Soviet Kuznetsov-class aircraft carrier, *Varyag* (which began sea trials last summer),²⁶ plans for two indigenously-built aircraft carriers, and the establishment of naval facilities stretching from Hong Kong to the Persian Gulf and beyond to Port Sudan (a programme that has been dubbed China's 'String of Pearls') all indicate that China intends to play a more assertive global power-projection role in due course. In the more immediate future, China's capabilities seem focused on deterring, delaying and, if necessary, defeating force projection by other states (especially the USA) into the Western Pacific and especially the South China Sea and the Taiwan Strait. The PLA's development of the doctrine of the 'Assassin's Mace', which the Pentagon translates as being an Anti-Access/Area Denial (A2/AD) strategy, has seen it optimise its forces to counter perceived US strategic strengths, plotting asymmetric routes by which to negate the USA's overwhelming force projection capabilities, especially those represented by the air and maritime power of the US 7th Fleet and forward-based USAF elements in the region.

The development of Chinese offensive cyber and anti-satellite capabilities reflects the PLA's recognition of the need to blunt the USA's information superiority in the event of war. Furthermore, the ongoing purchase of Russian advanced surface-to-air missiles such as the S-300 and the development of an indigenous 5th Generation stealth fighter (the J-20), indicate the seriousness of China's desire to challenge US air supremacy, especially over the Taiwan Strait, adjacent to which the PLA's most sophisticated military capabilities are deployed. Moreover, China's development of sea-bed-launched torpedo systems, hunter-killer nuclear submarines (SSNs) armed with supersonic anti-ship cruise missiles, and land-based Anti-Ship Ballistic Missiles featuring manoeuvrable warheads, clearly have the US 7th Fleet in mind with the intention of assertively exercising *de facto* sovereignty over the South China Sea and Taiwan Strait. China seeks to deter US naval power projection and defeat it if necessary. It was no coincidence, therefore, that a Chinese SSN surfaced within torpedo range of the USS Kitty Hawk on October 26, 2006.²⁷ The deterrent message was clear.

China's bellicose behaviour in the South China Sea is not only directed at deterring the USA. For instance, Chinese aggression towards Vietnamese shipping in the Gulf of Tonkin has engendered further mistrust among its neighbours. Even when a joint Vietnamese-Chinese maritime patrol aimed ostensibly at building mutual trust was conducted in the Tonkin Gulf in June 2011, the CCP's international mouthpiece, *The Global Times*, swiftly declared: 'If Vietnam wishes to create a war in the South China Sea, China will resolutely keep them company. China has the absolute might to crush the naval fleets sent from Vietnam. China will show no mercy to its rival due to 'global impact' concerns.'²⁸ Such pronouncements, when coupled with Chinese behaviour over the Spratly and Paracel Islands, hardly seem to accord with China's self-proclaimed 'Peaceful Development'. Indeed, China's behaviour seems at odds with their Ambassador to the UK's recent pronouncement pledging that 'We will do everything we can to keep the South China Sea, the East China Sea and our entire neighborhood peaceful and stable.'²⁹

Whilst the rationale for China's military build-up is partly known (ie. connected with Taiwan and dominance of the South China Sea), it also remains partly shrouded in mystery. This may be an intentional Chinese ploy. In accordance with Sun Tzu's philosophy, China has cultivated strategic ambiguity both to mask and exaggerate its strategic intentions.³⁰ Indeed, embracing Sun's concepts of deception, Deng Xiao Ping famously urged China to 'Conceal brilliance, cultivate obscurity.'³¹ The Chinese Ambassador to the UK recently highlighted the importance of Sun Tzu's influence on Chinese foreign and defence policies, stating that, 'For China, the importance of The Art of War has spread far beyond military studies. The book has deep influence in framing China's foreign policy and its approach to security and defence.'³² Hence, although some commentators expect that China's strategic outlook will become clearer after the anticipated leadership transition in Autumn 2012, it seems equally likely that China will continue to adopt a posture of strategic ambiguity built on calibrated propaganda, munificence and belligerence that increasingly defines its approach to international relations. Nevertheless, because of its inscrutability, China's policy of strategic

ambiguity has provided the pretext for the USA's 'strategic pivot' to the Asia-Pacific region. Alarmed by the development of capabilities apparently tailored to blunt its force projection capabilities, the US is developing its own counter-doctrine, named 'Air-Sea Battle', a title which seeks to emulate the revolutionary impact of its Cold War era 'Air-Land Battle' antecedent of the early 1980s. Strategic ambiguity, confusions between proclamations of 'peaceful development' and the deployment of offensive capabilities and the consequent reaction that such uncertainty has induced in US strategists' minds, are all contributing to a sense of insecurity in the region. Nowhere is this more pronounced than in Taiwan.

Taiwan

The USA and Taiwan neither share a defence treaty nor are they formal allies. The USA does not even recognise Taiwan as an independent state. Yet, as the Taiwanese author, Denny Roy, has noted: 'USA support for Taiwan is the largest single impediment to a stable working relationship between Washington and Beijing.'³³ National and ideological pride compels the PRC to maintain its uncompromising position on Taiwan, despite a recent thaw in the cross-Strait relationship helped by the re-election of the Kuomintang's 'One China' advocate, Ma Ying-jeou, as Taiwanese President in January 2012. Nevertheless, the PRC's long-term policy of reintegrating Taiwan remains as resolute now as it was in 1949. US Secretary of State Dean Acheson foresaw that, 'although a remnant of the National Government may survive in South China or in Formosa [Taiwan] for months or years to come, it will at best be a local regime... eventually most or all of China will come under Communist rule.'³⁴ Article 2 of the PRC's Anti-Secession Law carries a clearly threatening message: 'Taiwan is part of China. The state shall never allow the "Taiwan independence" secessionist forces to make Taiwan secede from China under any name or by any means.'³⁵ Unless and until the PRC and Taiwan reach a peaceful accommodation, America remains compelled 'to maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people on Taiwan.'³⁶ Happily, the two major powers have pursued a course of commendable pragmatism in recent years, accepting Taiwan's existence as a *de facto* independent state despite all parties' official lines that it is part of China. How long this equilibrium can be maintained in the face of growing Chinese economic and military strength is impossible to forecast, but the PRC has a proven track record of strategic patience. It may only be a matter of time before Taiwan succumbs to PRC dominance, but it seems most likely that such a development would occur through the intelligent application of Chinese hard and soft power short of actual war. Recognising the efficacy of such a strategy, former Taiwanese deputy defence minister Lin Chong-pin observed that 'China has decided it is cheaper to buy Taiwan than to attack it.'³⁷ Undeniably, the explosion in cross-Strait trade in recent years has done more to promote peaceful reconciliation between the two sides than any other factor. Nevertheless, as long as the risk of the PLA's military conquest of Taiwan remains a potent one (indeed, its capabilities to do so are improving all the time), the USA must *appear* willing and able to meet the contingency, for the purpose of deterrence at least. Nevertheless, the issue reveals a degree of US strategic ambiguity. Whether in fact the USA would fight to prevent a PRC military conquest of Taiwan remains uncertain. Indeed, America

does not guarantee coming to Taiwan's aid in the event of a military confrontation, the 1979 Taiwan Relations Act sensibly giving US policymakers the latitude to consider its response in light of the prevailing conditions and likely effect on American national interest:

'The President is directed to inform the Congress promptly of any threat to the security or the social or economic system of the people on Taiwan and any danger to the interests of the United States arising therefrom. The President and the Congress shall determine, in accordance with constitutional processes, appropriate action by the United States in response to any such danger.'³⁸

It is unlikely, for instance, that the USA would rush to Taiwan's aid should it decide unilaterally to declare its *de jure* independence, a move which many believe would provoke a full military response by the PRC. If, however, in the absence of a Taiwanese 'red rag', China should move offensively against the island, the political costs to the USA of not intervening would be severe. With regard to Taiwan, both the PRC and the USA seem permanently locked in a dispute that neither side wants, and continue to develop their military capabilities and doctrines to address the perceived threat they pose to one another. It has been argued that such developments enhance deterrence, but as the military balance shifts ever more in the PRC's favour, it may be concluded that deterrence is giving way to an escalatory arms race, which could lead to paranoid and dangerous miscalculation and misunderstanding. Among America's friends in the region, Taiwan may be viewed as occupying a unique position: US support for Taiwan will remain ambiguous and will never be enshrined in a formal treaty commitment. By contrast, in order to meet its other non-discretionary strategic aims in the region, America is actively seeking greater certainty in its partnerships with the remainder of its increasingly defence-minded Southeast Asian allies.

Southeast Asian Responses to China's Military Rise

In response to China's increasing military assertiveness, several East Asian states are enhancing their defence capabilities. In 2010, SIPRI warned: 'The current wave of South East Asian [military equipment] acquisitions could destabilize the region, jeopardizing decades of peace.'³⁹ Fears of a regional arms race do indeed seem to be gaining substance. For instance, Vietnam's defence expenditure rose by 70% in 2011 (albeit to a modest US \$2.6 billion).⁴⁰ Indonesia increased its defence spending by 27.9% in 2010, and recently ordered 24 sophisticated F-16C/D fighters from the USA.⁴¹ Per capita, Singapore is the World's fourth highest spender on defence,⁴² and in 2011 spent almost as much as Malaysia and Indonesia combined.⁴³ Furthermore, according to a 2010 SIPRI report, 'Singapore is the first ASEAN member to be included in the SIPRI Top 10 arms importers since the end of the Vietnam War'.⁴⁴ Described by Donald Weatherbee as a 'Chinese nut in the jaws of an Indonesian-Malaysian nutcracker',⁴⁵ Singapore's principal strategic concern is not Chinese expansionism, but the state's reliance on the trade passing through the Malacca Strait means that it has a vested interest in the maintenance of security and freedom of navigation in the South China Sea. Hence, although Singapore has hitherto cleverly balanced its relations with the USA and

China, it acknowledges its ultimate dependence on the USA in maintaining the flow of trade that passes through its waters and uses its port facilities. Purchases of highly advanced and export-restricted US F-15SG fighter-bombers and membership of the exclusive F-35 Joint Strike Fighter development programme clearly indicate that Singapore is fundamentally aligned to the USA.

Mirroring Singapore's approach, Thailand has also attempted to maintain good relations with both the PRC and the USA. Thailand's relations with China have been relatively amicable since the end of the Vietnam War, when both states shared an interest in curbing Vietnamese incursions into Cambodia/Kampuchea. Indeed, unlike several of its ASEAN partners, Thailand has no territorial dispute with the PRC, which has given the country substantial latitude in developing ever stronger economic ties with China. Nevertheless, it appears that the US-Thai partnership is undergoing a critical renaissance, partly due to the USA's 'strategic pivot' and its softening towards Myanmar, which has gone down well in Bangkok. In spite of significant internal unrest over the past decade, US-Thai defence cooperation seems to be as robust as ever. In February 2012, the 31st Annual US-Thai 'Cobra Gold' Exercise was held in Thailand. The exercise, which also involved forces from Indonesia, Japan, Malaysia, the ROK and Singapore, was aimed at bolstering US military partnering in the region and, although the organizers smirkingly proclaimed that the exercise was aimed at defeating a 'fictitious adversary in the Pacific arena'⁴⁶ no observer could fail to conclude that China was the potential aggressor they had in mind. Thailand is being squeezed politically by renewed superpower competition in the region, but given the enduring nature of the strategic relationship it shares with the USA, it seems most likely that Thailand will more strongly embrace its established US ally. The Philippines, which is feeling increasingly bullied by Chinese actions on and around the contested Spratly Islands, is re-energizing its defence relations with the USA as well: the two countries held their inaugural '2+2' (ie. the defence and foreign secretaries of both states) meeting on April 30, 2012, during which US Defense Secretary Leon Panetta announced that the USA is 'enhancing our defense cooperation and expanding security partnerships throughout the region in order to sustain peace and stability. And we are committed to continuing our robust stabilizing presence in that region.'⁴⁷ Underlining the USA's robust commitment to the Philippines, the two countries are to hold twenty joint military exercises this year, a major focus of which is maritime security.

Joint military exercises, the energizing of bilateral defence arrangements and the enhancement of defence capabilities all indicate that there is genuine fear among China's neighbours that its intentions are not benign and that they consider the USA has a beneficial role to play in stabilizing the region. In light of the unquantifiable threat posed by China to their interests, it is unsurprising that so many East Asian states are hedging their bets by enhancing their bilateral defence arrangements with a USA that seems only too happy to reciprocate in order to bolster its own security interests. In a November 2011 Foreign Policy magazine article, Secretary of State Hillary Clinton placed the strengthening of *bilateral* security partnerships in the Asia-Pacific region as the first of her six key lines of action, and

described the USA's treaty alliances with Japan, Thailand, the ROK and the Philippines as the 'fulcrum' of its strategic turn to the Asia-Pacific.⁴⁸ The development of *bilateral* partnerships between the USA and its Asian interlocutors is understandable; what is curious, however, is the relative absence of a *multilateral* approach to addressing shared security concerns over China's military rise.

Southeast Asian Multilateral Approaches to Defence

For European and North American members alike, NATO has been a shining example of effective collective security stemming from a shared positive-sum liberal outlook. Given NATO's success, the absence of a similarly successful US-led multilateral approach in the Asia-Pacific region invites scrutiny. It is certainly arguable that, in the context of the Cold War, the creation of a political-military structure centred on Europe was of much greater immediate concern to the USA than was the need to create a similar structure in the Asia-Pacific region. However, notwithstanding the primacy of the European theatre, such logic fails to explain why the benefits of the North Atlantic model were nevertheless not *emulated* to bolster US strategic interests in the Asia-Pacific region. It appears that the USA was less prepared to forgo its position of political dominance with its Asian partners in the way in which it had been agreeable to do so with its European colleagues. It should also be recalled that, in the aftermath of the Communist victory in China in 1949 and the subsequent purging of the State Department's established China Hands during the McCarthyist 'Red Scare', the USA was partially allergic to, and partially ignorant of, the conditions specific to East Asia. Coupled with these factors was an inherent Europhilia and Asia-phobia within the power elites of Washington DC. According to a contemporaneous memo in its own official history, the State Department was institutionally disinclined to develop a multilateral strategic partnership with Asian states on the basis that '...we do not take the Asians very seriously and in fact regard them as inferiors.'⁴⁹

Racial and cultural prejudices seem, therefore, to have been heavily influential in determining the USA's approach to the Asia-Pacific region. Indeed, of its eight member states, the South East Asia Treaty Organization (SEATO) contained only two states from the region: the Philippines and Thailand. The remaining members were: a mixture of the wartime Anglo-Saxon allies, a France determined to cling on as a colonial power and an immature Pakistani state whose single interest was gaining a NATO-esque Article V provision of mutual defence (an assurance that never came). Owing to the strategic subordination of the Asian theatre to Europe, SEATO never enjoyed the level of US commitment that it gave to its North Atlantic counterpart. To illustrate the point, as Hemmer and Katzenstein discovered,⁵⁰ the USA actively sought to bury the name 'SEATO' because, owing to its etymological relationship to 'NATO', it speciously indicated that a similar level of US political and military commitment was invested. In military and political terms, of course, NATO and SEATO could not have been more dissimilar. The absence of any protocol emulating NATO's core Article V principle that an attack on one is an attack on all (despite 'Collective Defense' being an explicit part of the Manila Pact's full title), neutered SEATO as a genuinely powerful political-military alliance from

the outset. That it lasted until 1977 is as remarkable as its demise was inevitable. And, as has already been pointed out, the lack of enfranchisement of all but two of the region's states made SEATO irrelevant. In contrast to its multilateral approach with its European allies, the USA pursued a political-military strategy based on bilateral partnerships in Asia. But although East Asian political-military alliances have been notable for their failure, some success (albeit without direct US membership) has been achieved by the ASEAN, albeit only in the benign fields outlined in the ASEAN Declaration.⁵¹

Whither ASEAN?

Unlike SEATO, ASEAN was formed exclusively by states native to the Southeast Asian region. But, geographical proximity aside, the diverse cultural, political and religious make ups of the states that formed ASEAN in 1967 made its members somewhat unnatural bedfellows;⁵² these incongruities only grew with the accession of the most recent 5 joiners, which included Communist command economies (Vietnam and Laos), an Islamic absolute monarchy (Brunei) and a military junta (Burma). Furthermore, the needs of their respective economies have often made ASEAN's constituent states appear more like competitors than co-operators – a proposition given credence by the failure of ASEAN to create a Free Trade Area until 1992, an initiative that has only recently achieved full maturity. With just ambassadorial representation routinely supporting ASEAN's institutions, there has been an absence of personal investment by the member states' highest leadership, a factor that has contributed to ASEAN's aura of political 'drift'. Indeed, the first ASEAN Leaders' Formal Summit did not take place until 1976, 9 years after the Association's formation. As a consequence of the ambivalent engagement of the member states' leaders, ASEAN has suffered an absence of political will to drive forward co-operative advancement, no more so than in the defence sphere. In the absence of binding treaties, the raw national interest of one or more member states has routinely hobbled ASEAN's ability to speak with unity on the most pressing issues facing the region. Notions of inviolate sovereignty and the trademark 'ASEAN Way' of finding consensus between states on issues only of least difficulty, and ignoring issues of potential discord, have given the appearance of a grouping more concerned with conflict avoidance rather than resolution.

ASEAN has no formally bonding security or defence treaties. The Treaty of Amity and Cooperation (TAC), which was signed by ASEAN's founder nations on February 24, 1976, is sometimes cited as a successful manifestation of the 'ASEAN Way', but the Treaty's articles are little more than an expansion of the universally applauded milieu goals articulated in the original ASEAN Declaration,⁵³ which themselves appear simply to be a restatement of the UN Charter's key principles. The TAC, therefore, has done little of substance to promote the idea of a security community, expressing instead the utopian ideal that nations should address their differences peaceably. There is so little that is contentious within the TAC that, following ASEAN's 1987 decision to allow non-member states to sign the Treaty, few non-ASEAN states have found it politically difficult to sign up to its accords.⁵⁴ The PRC signed the TAC in 2003, and has found the Treaty useful in leveraging its 'peaceful' attempts to secure control of the

South China Sea and the disputed territories therein. America signed the TAC in 2009, possibly because it had only recently become aware that the Treaty existed at all. Secretary of State Clinton recently revealed her embarrassment that, 'I went to the ASEAN headquarters in Jakarta and signed our intent to accede to the Treaty of Amity and Co-operation, which I have to confess I had never heard of—(laughter)—before preparation for the trip.'⁵⁵ Such ignorance is, on the one hand, startling, given that US strategic and economic interests in the region are profound, as Clinton acknowledged: 'we do more trade with those [ASEAN] nations than we do with China.'⁵⁶ On the other hand, historical US ignorance of the TAC may simply be a reflection of the Treaty's purely symbolic function. The TAC contains no provision for collective defence, and renounces the use of force altogether. Consequently, the TAC seems little more than an expression of collective appeasement, to which potential aggressors, as well as partners, have been only too ready to lend their unstinting support through becoming signatories. The impotence of ASEAN as a coherent security organization was exemplified by the grandly titled 2009 'Joint Declaration of ASEAN Defence Ministers on Strengthening ASEAN Defence Establishments to Meet the Challenges of Non-Traditional Security Threats.'⁵⁷ A clue to the ineffectualness of the Declaration's contents is contained in the adjective 'Non-traditional', which immediately alerts the reader to the Declaration's conscious avoidance of state-based threats which, as we have seen, seem to be the most pressing ones facing the Southeast Asian region. But the Declaration disappoints even further by ignoring resource competition, separatist movements, criminality, people trafficking and terrorism, instead simply making bland pledges to develop ministerial forums and adopt concepts concerning military-civilian cooperation in the uncontentious fields of disaster and humanitarian relief. It was hardly a triumph of defence cooperation.

Nevertheless, although ASEAN has failed to create any tangible joint approaches in the defence and security fields, the Association's longevity has successfully created a system of norms and behavioural patterns that have routinely provided consensus on other matters, arguably contributing to a peaceful ambiance. ASEAN's aversion to Western-styled organizational centralisation, and therefore the avoidance of the sort of internecine spats that often occur under such arrangements (the UK's relationship with the EU is a case in point), has certainly been a major strength in maintaining the Association's cohesion. Whilst analysts continue to puzzle over its achievements, ASEAN is, in a way, its own achievement. Tacit acceptance of US oversight remains a reality, however. Indeed, in amusingly paraphrasing Lord Ismay's famous observation on NATO by describing ASEAN's role as being to 'keep America in, China and Japan down, and ASEAN relevant',⁵⁸ Yuen Foong Khong hit the right note. ASEAN does not need to antagonise China as long as the USA can be kept in play, a role which the USA has quite evidently been eager to play under President Obama's 'strategic pivot'. Hence, in the face of rising Chinese military power, ASEAN seems content for the USA to continue in its role as regional sheriff. The political-strategic space the USA has consequently provided ASEAN has allowed the Association to adopt a course of commendable pragmatism towards China, an approach Khong has subtly described as one of 'cautious engagement' rather than 'polite containment'.⁵⁹ This policy increasingly looks

at odds with the USA's robust posture towards China, but it might be argued that the two parties are applying (unwittingly, perhaps) a 'carrot and stick' agenda. Whether such a twin-track approach, intentional or otherwise, is yielding results in curbing Chinese adventurism, is so far impossible to tell; if it is being successful, it is doubly difficult to determine the degree of success that can be attributed to the US stick or the ASEAN carrot, an issue that perplexes ASEAN, which worries about its continued relevance. It is a concern shared by many scholars. As Alice Ba has observed, 'predominant IR theories view ASEAN's cooperation as weak, inconsequential, even "unworthy of theoretical reflection".'⁶⁰

ASEAN's institutionalised disinclination to tackling the pressing security issues affecting the region resulted in the creation of a relief valve through which such matters could be considered without any compulsion to act on them. The product was the ASEAN Regional Forum (ARF), which was created in 1994. The ARF's motto of 'Promoting peace and security through dialogue and cooperation in the Asia Pacific'⁶¹ is classic ASEANese: lengthy in rhetoric, short in substance. In fairness, the ARF is the Asia-Pacific region's premier security forum and is attended by member states' foreign ministers. The ARF's mere existence ensures a certain degree of ASEAN influence with major external powers with interests in the region. Indeed, Yuen Foong Khong has described the ARF as 'probably the most important organization in ASEAN's institutional repertoire for dealing with strategic uncertainty.'⁶² Yet despite its impressive membership (which includes India, Japan, the PRC and the USA) and the useful platform it therefore provides for dialogue on the contentious strategic issues affecting the region, the ARF remains little more than a talking shop. It does neither the USA nor the PRC any harm to accord with the diplomatic niceties involved with ARF membership, but both gain greater traction with their key security and defence priorities by acting bilaterally; for the USA, no partner in the Asia-Pacific region is more significant than Japan.

US-Japanese Military Cooperation

Of all the USA's bilateral defence relations in the Asia-Pacific region, the alliance it shares with Japan is undoubtedly the most critical, and was recently described by Secretary of State Clinton as 'the cornerstone of peace and stability in the region.'⁶³ Militarily, the US-Japanese Alliance is marked by highly integrated command, control and planning structures. Nevertheless, the notoriously one-sided security arrangement clearly has its frictions: Japan's Constitution prohibits its entering a truly mutual collective defence arrangement (ie. whereas US servicemen are committed to fighting and dying for Japan, Japan has no reciprocal commitment); and Japanese defence spending is capped at a paltry 1% of GDP. But there are clear signs that Japan is beginning to interpret the pacifistic Article 9 of its constitution more flexibly, an interesting example being its space program. Initially constrained by a strict interpretation of 'peaceful', Japanese military capabilities could not use Japanese space assets, a policy that is now being relaxed to allow the use of space-based capabilities for non-aggressive purposes. In a further sign of Japanese willingness to cater seriously for its defence, it has described its alliance with the USA as 'Deepening',⁶⁴ a sentiment given substance by the strengthened strategic commitments contained in the countries' joint statement signed at the

Japan-U.S. Security Consultative Committee ('2+2') in 2011, which marked a half century of the US-Japan Security Treaty.

The lynchpin of US power-projection capabilities in the Asia-Pacific region is its forces stationed on Okinawa. In describing the US presence in Okinawa as 'the core of the Japan-U.S. Security Arrangements',⁶⁵ the Japanese 2011 Defense White Paper accorded US forces in Okinawa the same strategic importance as General MacArthur attached to them in his decisive 1948 exchanges with George Kennan, in which he described Okinawa as the 'key bastion' in the region.⁶⁶ Although domestic politics makes the discussion of US basing on Okinawa and elsewhere in Japan a perennially prickly issue, Japan fundamentally recognizes that the gold-plated security umbrella provided by the USA is irreplaceable. Furthermore, despite its membership of the ADMM Plus, ARF and ASEAN+3 groupings, Japan's tattered early 20th Century history of brutal imperialism and its incapacity to adopt a collective defence arrangement makes the prospect of Japan entering formal multilateral, or even bilateral, defence arrangements with any of its near neighbours virtually unthinkable.⁶⁷ Indeed, a constitutionally constrained Japan has consistently avoided the notion of entering such partnerships, fearing that such a move would give the USA cause to abandon the awesome protection it provides Japan.

Whilst Chinese strategic intentions remain cloaked in mystery, it would seem natural that Japan would wish to draw closer in security terms to the USA. Historical ill-feeling is an omnipresent feature characterizing Sino-Japanese relations, and increased nationalism on both sides has added spice to the ugly maritime spats that have occurred between the two states in recent years. The egregious crimes committed by Japan during its subjugation of Manchuria and the Second Sino-Japanese War remain a major factor influencing the political ambience between China and Japan, as bickering over school textbooks and the controversy over Japanese politicians' insensitive visits to the Yasukuni Shrine (such as that made by Prime Minister Koizumi in 2006) have demonstrated. Such issues have been exploited by the CCP's propaganda machine, which has harnessed the emotive issue of the 'Century of Shame' to mobilize a brand of nationalism replete with anti-Japanese sentiment. Chinese indulgence of North Korea has also irritated Japan, over whose landmass several North Korean missile tests have been conducted. Furthermore, in common with several of China's neighbours, Japan is involved in a delicate territorial dispute with the PRC (over the Diaoyu/Senkaku Islands). So, despite the economic necessity of doing business with China, it is little wonder that Japan and China remain fundamentally antipathetic towards one another.

Japan's 2011 annual Defense White Paper revealed in great detail its anxieties over Chinese military behaviour in the skies and on the seas around Japan, and was highly critical of the lack of transparency in China's defence arrangements, singling out its budget as being especially misleading⁶⁸ – an accusation that elicited the fury of China's Foreign Ministry spokesman, Ma Zhaoxu, who described Japan's comments as 'irresponsible' and proclaimed (somewhat unconvincingly, given its behaviour in the South China Sea) that 'China has never

and will not attempt to threaten any country.’⁶⁹ After decades of national schizophrenia concerning its alliance with the USA, Japan now seems to be taking a long-term strategic choice of committing meaningfully to the partnership and is inching its way towards being a ‘normal’ military power. Like the USA, Japan acknowledges the essential nature of its economic ties to China, but it also understands its bottom-line strategic security reliance on the USA and its onus to invest in the relationship. Of notable significance has been Japan’s decision to purchase the Lockheed Martin F-35 Lightning II Joint Strike Fighter, notionally as a replacement for its 1960s-vintage F-4EJ interceptors, but which will deliver the Japanese Air Self Defense Force an unprecedented offensive capability – a fact understandably downplayed by a Japanese Ministry of Defense mindful of Article 9 of the country’s constitution, which forbids the maintenance of ‘war potential’ and demands that only ‘the minimum level of armed strength [necessary] for self-defense’ is maintained.⁷⁰ Apart from marking a step-change in its appetite for the procurement of offensive systems, Japan’s decision to buy the F-35 has important strategic significance for three other reasons: it gives substance to the notion that the US-Japan Alliance is set to endure; it corrects the perceived snub delivered by the USA to Japan by its refusal to export the F-22; and it also indicates that Japan is prepared to shoulder an increased share of the burden for its defence. Certainly, the increasing concerns in Japan over China’s military development, the unpredictability of a North Korean regime armed with ballistic missiles demonstrably capable of striking Japan,⁷¹ and the close cooperation between the Japanese and US militaries in response to the 2010 earthquake and tsunami disaster have all injected a greater sense of shared purpose between the USA and Japan. In sum, the US-Japan Alliance looks stronger now than at any point since the end of the Cold War.

Conclusion

Whilst China’s military capabilities grow, its intentions remain opaque and its actions continue to be seemingly inconsistent with its self-proclaimed ‘peaceful rise’; both the USA and its Asian partners are reacting by heightening their security postures, as evidenced by the USA’s ‘strategic pivot’ and the upgrading by many Southeast Asian states and Japan of their defence capabilities. Unable to meet its strategic objectives in the region unilaterally, America is actively reinvigorating its bilateral alliances. The USA’s lack of faith in Asian multilateral defence, as best demonstrated by its lacklustre engagement in SEATO, has been reinforced more recently by ASEAN’s failure to deal effectively with security threats to the region. The issue is complicated because, although many of the ASEAN states have disputes with China, some are equally in dispute with each other, which further reduces the likelihood of a genuine collective defence agreement between ASEAN states. Furthermore, Japan, which is key to the USA’s Asian strategy, is incapable of (or unwilling to) enter multilateral defence partnerships for fear of weakening its ties with the US. Sentiment also plays an important part: given their difficult shared history, few of Japan’s neighbours would welcome it as a formal ally. Such factors help explain the USA’s preference for enhancing its bilateral partnerships in the Asia-Pacific region. Subtle US diplomacy is reaping rewards in the Asia-Pacific region, and the personal investment of President Obama and Secretary of State Clinton

has done much to foster enhanced relations with allies in East Asia. Grand political statements are being complemented through real action, as demonstrated by the USA's embrace of Japan and Singapore into some of its most prestigious military projects, such as the F-35, and the deepening of defence ties through the upgrading of joint exercises like 'Cobra Gold'. Such activity, which gives substance to America's 'strategic pivot', is giving confidence to East Asian states that the USA intends to balance China's increasingly provocative behaviour, especially in the South China Sea. However, the USA's 'strategic pivot' brings with it an increased risk of escalation and potential confrontation with the PRC.

China's fielding of its most sophisticated military capabilities on its side of the Taiwan Strait reveals an increasingly coercive posture towards the island. Although the USA and China must be complimented for their pragmatic handling of the situation in recent years, the dangers accompanying misjudgement or miscalculation by China, Taiwan or America are growing. Nevertheless, the prospect of Sino-US conflict over Taiwan, which represents arguably the most dangerous scenario, seems unlikely, especially in light of the recently re-elected Taiwanese Government's conciliatory stance towards the PRC. A more immediate concern is the heightened tension surrounding the South China Sea, which China increasingly appears to be treating as de facto sovereign territory; indeed, some have characterized its approach as a modern 'Monroe Doctrine'.⁷² In the current political atmosphere surrounding a US presidential election campaign, it is unsurprising that a certain amount of 'Panda Bashing' is taking place. Not all of this may simply be a matter of election histrionics: if Mitt Romney is successful in securing the presidency and holds good on his promise of declaring the PRC as a 'currency manipulator' on his first day in office, Sino-US relations are bound to worsen with the attendant risk of heightened US-PRC military friction. The matter could potentially be compounded by the uncertainty associated with the CCP's leadership transition scheduled for Autumn 2012, a process in which a few cracks are beginning to show, especially following the recent purging of Bo Xilai amid sordid allegations of corruption and murder. On both the US and Chinese sides, the potential for paranoid miscalculation and insecurity appears to be increasing, but conflict is not inevitable: shared economic interests and the mutual prosperity that peace delivers are strong antidotes to war. Nevertheless, the US and its allies would do well to heed *The Economist's* recent advice that 'The prospect of an Asian arms race is genuinely frightening, but prudent concern about China's build-up must not lapse into hysteria'.⁷³ This is principally a challenge for diplomacy rather than military strategy; statesmen must not allow the growth of military capabilities to gain such momentum that conflict becomes a self-fulfilling prophecy.

Notes

¹ The DoD is required by the Congressional Budget Control Act 2011 to find savings of \$487 Billion against its 2011 forecast of base budget agreements between FYs2012 and 2021. (US DoD, "Fact Sheet: The Defense Budget," US DoD, http://www.defense.gov/news/Fact_Sheet_Budget.pdf (accessed March 14, 2012)).

² BBC, "Barack Obama says Asia-Pacific is 'Top Priority'", BBC (November 17, 2011), <http://www>.

bbc.co.uk/news/world-asia-15715446 (accessed March 14, 2012).

³ The last major inter-state conflict in East Asia was the Sino-Vietnam War of 1979.

⁴ US DoD, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," US DoD (January, 2012), <http://graphics8.nytimes.com/packages/pdf/us/20120106-PENTAGON.PDF> (accessed March 14, 2012).

⁵ The most notable recent example of Chinese harassment of US Government shipping was the March 2009 *USNS Impeccable* incident. Details can be found in the following article: "Close Encounters at Sea," <http://www.usnwc.edu/getattachment/d11a2362-fa30-4742-8ec4-c8bed2025114/Close-Encounters-at-Sea--The-USNS-Impeccable-Incid> (accessed March 28, 2012). Video footage of the event is available at <http://www.youtube.com/watch?v=hQvQjwAE4w4>

⁶ Information Office of the State Council of the People's Republic of China, "China's National Defense in 2010," (March 31, 2011), http://www.china.org.cn/government/whitepaper/2011-03/31/content_22263357.htm (accessed March 14, 2012).

⁷ Stephanie Condon, "Obama: We Welcome China's Rise" *CBS News* (January 19, 2011) http://www.cbsnews.com/8301-503544_162-20028958-503544.html (accessed March 19, 2012).

⁸ Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2011* (Washington D.C.: DoD, 2011), I. http://www.defense.gov/pubs/pdfs/2011_cmpr_final.pdf (accessed March 25, 2012).

⁹ People's Republic of China, "China's National Defense in 2010".

¹⁰ Office of the Secretary of Defense, *Annual Report to Congress*, I.

¹¹ *ibid*.

¹² BBC, "China military budget tops \$100bn," *BBC* (March 4, 2012), <http://www.bbc.co.uk/news/world-asia-china-17249476> (accessed March 15, 2012).

¹³ Office of the Secretary of Defense, *Annual Report to Congress*, 41.

¹⁴ In light of the high level of internal consistency of its statistics, SIPRI's historical data is the preferred source in the remainder of this paper.

¹⁵ Kenji Minemura, "China's real defense budget almost double official figure, military sources say," *The Asahi Shimbun* (March 5, 2012) <http://ajw.asahi.com/article/asia/china/AJ201203050045> (accessed March 15, 2012).

¹⁶ Xinhua, "Defense budget to grow 12.7% to \$91.5 billion," *China Daily* (March 4, 2011) http://www.chinadaily.com.cn/china/2011npc/2011-03/04/content_12116490.htm (accessed March 18, 2012).

¹⁷ Figures for the DPRK and Myanmar are not available.

¹⁸ China has one carrier in service (the *Shi Lang*), and has potentially 4 more in its defence procurement programme.

¹⁹ *ie*. Certain items, like soldiers' pay and allowances, are much lower per capita in the PLA than in the US Armed Forces.

²⁰ John K. Tkacik Jr, "A Chinese Military Superpower?," *The Heritage Foundation* <http://www.gees.org/documentos/Documen-02197.pdf> (March 8, 2007) (accessed March 18, 2012).

²¹ Ambassador Liu Xiaoming (Speech to the UK Joint Services Command and Staff College), "Sun Tzu's Wisdom Behind China's Diplomacy and Defence Policy," Ministry of Foreign Affairs

of the PRC (February 11, 2012) <http://www.fmprc.gov.cn/eng/wjb/zwjg/zwbd/t903971.htm> (accessed March 21, 2012).

²² SIPRI estimated US defence spending to be US \$689.6 billion for 2011; for the same period, SIPRI estimated the PRC's military spending to be US \$129.3 billion (at 2010 \$US value). (SIPRI, 'SIPRI Military Expenditure Database 2012').

²³ Figures taken from SIPRI Military Expenditure Database 2012.

²⁴ People's Republic of China, "China's National Defense in 2010."

²⁵ *ibid.*

²⁶ The Varyag has been renamed '*Shi Lang*' in PLA Navy service. Interestingly, Shi Lang was the name of a Qing-dynasty admiral who conquered Taiwan. (GlobalSecurity.org, <http://www.globalsecurity.org/military/world/china/shi-lang.htm> (accessed March 19, 2012)). Although it may assume an operational role eventually, the *Shi Lang* is expected principally to act as a research and development vessel which will inform China's indigenous carrier building programme.

²⁷ Bill Gertz, "China sub secretly stalked U.S. fleet," *The Washington Times* (November 13, 2006) <http://www.washingtontimes.com/news/2006/nov/13/20061113-121539-3317r/?page=all> (accessed March 12, 2012).

²⁸ Margie Mason (Associated Press), "Vietnam, China hold joint naval patrol amid spat," CNSNews.com (June 21, 2011) <http://cnsnews.com/news/article/vietnam-china-hold-joint-naval-patrol-amid-spat> (accessed March 19, 2012).

²⁹ Liu, "Sun Tzu's Wisdom Behind China's Diplomacy and Defence Policy."

³⁰ Sun Tzu wrote: 'When able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near.' (Sun Tzu, *The Art of War* (Minneapolis: Filiquarian Publishing, 2006), 7). According to *The Economist*, in 2006 President Hu Jintao presented a silk copy of Sun Tzu's "The Art of War" to US President George W Bush – a telling (and arguably sarcastic) gesture given the state of Iraq at the time. (The Economist, "China abroad: Sun Tzu and the art of soft power," *The Economist* (December 17, 2011), <http://www.economist.com/node/21541714> (accessed March 20, 2012)).

³¹ Emma Graham Harrison, "At 60 China seeks greater global role," *Reuters USA* (September 30, 2009), <http://www.reuters.com/article/2009/09/30/us-china-anniversary-diplomacy-sb-idUSTRE58T1TD20090930> (accessed March 20, 2012).

³² Liu, "Sun Tzu's Wisdom Behind China's Diplomacy and Defence Policy."

³³ Denny Roy, *Taiwan – A Political History* (Ithaca: Cornell University Press, 2002), 243.

³⁴ Thomas J Christensen, *Useful Adversaries: Grand Strategy, Domestic Mobilization, and Sino-American Conflict, 1947-1958* (Princeton: Princeton University Press, 1996), 78.

³⁵ Hu Jintao (President of the PRC), "Anti-Secession Law" (March 14, 2005): 1, http://www.china.org.cn/china/LegislationsForm2001-2010/2011-02/11/content_21898679.htm (accessed November 20, 2011).

³⁶ US Government, "Taiwan Relations Act Section 3301 [enacted April 10, 1979]," Taiwan Documents Project <http://www.taiwandocuments.org/tra01.htm> (accessed March 19, 2012).

³⁷ The Economist, "Sore Points," *The Economist* (October 22, 2009), <http://www.economist>.

[com/node/14678491](#) (accessed April 10, 2012).

³⁸ US Government, "Taiwan Relations Act Section 3302 [enacted April 10, 1979]," Taiwan Documents Project <http://www.taiwandocuments.org/tra01.htm> (accessed March 19, 2012).

³⁹ SIPRI, "15 Mar 2010: New SIPRI data on international arms transfers reflect arms race concerns," <http://www.sipri.org/media/pressreleases/2010/100315armstransfers> (accessed March 16, 2012).

⁴⁰ GlobalSecurity.org, "Vietnam's Defense Budget," <http://www.globalsecurity.org/military/world/vietnam/budget.htm> (accessed March 14, 2012).

⁴¹ Notably, the refurbished F-16C/D Block 25 models being sold to Indonesia are of a substantially higher capability than the F-16A/B models currently operated by the Republic of China (Taiwan) Air Force (ROCAF). Taiwan has attempted to order 66 F-16C/Ds from the US, which initially declined, agreeing only to a modest upgrade programme for the ROCAF's fleet of 134 F-16As. In April 2012, the US Government agreed to reconsider Taiwan's request; at the time of writing, the outcome was still to be decided. Interestingly, the USA enjoys a remarkably high approval rating of 54% in Indonesia, in marked contrast to the negative perception held by most Muslim countries' populations. (PewResearchCenter, "China Seen Overtaking U.S. as Global Superpower," PewResearchCenter (July 13, 2011), <http://www.pewglobal.org/2011/07/13/chapter-2-views-of-the-u-s-and-american-foreign-policy/> (accessed March 15, 2012)).

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⁴⁵ Donald E. Weatherbee, *International Relations in Southeast Asia* (Lanham: Rowlands and Littlefield, 2005), 37.

⁴⁶ Airman 1st Class Whitney Tucker, "Relationships enhanced, lessons learned at Cobra Gold 2012," US Pacific Air Force (February 27, 2012), <http://www.pacaf.af.mil/news/story.asp?id=123291481> (accessed March 15, 2012).

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⁵² Indonesia, Malaysia, the Philippines, Singapore and Thailand.

⁵³ ASEAN, "Treaty of Amity and Cooperation in Southeast Asia – Indonesia, 24 February 1976," ASEAN, <http://www.asean.org/1217.htm> (accessed March 20, 2012).

⁵⁴ A 2010 amendment to the TAC has paved the way for international organizations, such as the EU which is eager to join, to become signatories.

⁵⁵ Lexington, "An interview with Hillary Clinton," *The Economist*, March 22, 2012 <http://www.economist.com/blogs/lexington/2012/03/foreign-policy> (accessed March 24, 2012).

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⁵⁸ Yuen Foong Khong, "Chapter 5: Coping with Strategic Uncertainty," in *Rethinking Security in East Asia*, eds. J. J. Suh, P. J. Katzenstein and A. Carlson (Palo Alto: Stanford University Press, 2004), 202.

⁵⁹ *ibid.*, 188.

⁶⁰ Alice D. Ba, *(Re)Negotiating East and Southeast Asia* (Palo Alto: Stanford University Press, 2009), 18.

⁶¹ See <http://aseanregionalforum.asean.org/>

⁶² Khong, "Chapter 5: Coping with Strategic Uncertainty," 198.

⁶³ Clinton, "America's Pacific Century."

⁶⁴ Japanese Ministry of Defense, "Defense of Japan 2011," 289, http://www.mod.go.jp/e/publ/w_paper/pdf/2011/12Part1_Chapter2_Sec3.pdf (accessed March 15, 2012).

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⁶⁶ George F. Kennan, "PPS/28: Recommendations With respect to U.S. Policy Toward Japan, Annex I" in *Foreign Relations of the United States Volume VI – The Far East and Australasia*, Eds. John G. Reid and David H. Stauffer (Washington D.C., 1974), 709.

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⁶⁸ Japanese Ministry of Defense, "Defense of Japan 2011," 74.

⁶⁹ Xinhua, "China refutes Japan's 2011 defense white paper," *China Daily* (August 4, 2011), http://www.chinadaily.com.cn/china/2011-08/04/content_13045569.htm (accessed March 13, 2012).

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Gradual Reform or a Turning Point in Russian Military Transformation: How Russian Air Power has developed through Conflict and Reform from 1991 - 2012

By Wing Commander Chantal Baker

Since the fall of the USSR the Russian military has faced a significant period of transition. This paper examines the challenges of air power development within the context of wider Russian military reform. After a brief review of initial post-Cold War context this paper will consider how air power was utilized in recent combat operations in Chechnya and Georgia with variable success. It will evaluate the structural reforms that have taken place between the two conflicts in terms of force structure, training and budget as well as equipment modernization. This paper will then briefly consider the lessons learned from the Georgia conflict before detailing the extensive military reform that has been initiated since. Finally, it will discuss the nature of the reforms and assess the utility of modern Russian air power capabilities regarding regional security and in Russia's relations with the international community. In doing so this paper will judge the importance of Russian air power reform on security now and in balancing against future threats.

Introduction

Since the fall of the USSR the Russian military has faced a challenging period of transition. After 1991 Russia retained only about 65 per cent of the Soviet fleet of combat aircraft whilst many of the most modern airframes, together with vital elements of the logistical and support structure, remained outside of the Russian Federation.¹ The powerful force that had once rivalled the US had also suffered from years of underfunding and a subsequent decline in professional training and combat skills. This deterioration, together with poor equipment serviceability, significantly impacted the capability of Russian air power.

In the 1990's the focus of Russian attention also shifted from geostrategic threats to more localized civil unrest. This was coupled with the development of air power thinking within the military. Historically a supporting activity to enable the advance of tank battalions, the role of air power as a designated strike capability was influenced by both Russian and international experience. These factors, together with ongoing budget restrictions have influenced the direction of ongoing Russian military reforms and set the context for the use of air power in Chechnya and in Georgia. The reforms that followed in the wake of the Georgian conflict in 2008 marked a turning point in Russian military transformation. From this point the organization and command of Russian air power has been remodelled in a modern image.

This paper examines the challenges of air power development within the context of wider Russian military reform since the fall of the Berlin wall to the present day. After a brief review of initial post-Cold War context this paper will consider in detail how air power was utilized in recent combat operations in Chechnya and Georgia with variable success. It will highlight the limitations and successes of the use of air power firstly in the Chechen conflicts, with consideration of the lessons learned between the first to the second Chechen wars. It will then evaluate the extent to which the lessons learned from Chechnya were then employed in the Georgian war. It will consider the structural reforms that have taken place between the two conflicts in terms of force structure, training and budget as well as equipment modernization. This paper will then briefly consider the lessons learned from the Georgia conflict before detailing the extensive military reform that has been initiated since, under the leadership of Defence Minister Anatolii Serdyukov. In so doing it will evaluate the impact of reform on: structure, training, personnel, equipment and the budget of the Russian air force, considering the positive developments and challenges of the reforms to date. Finally, it will discuss the nature of the reforms and different motivations purported to have influenced them in order to inform the debate on the utility of modern Russian air power capabilities for security in the region and in Russia's relations with the international community. By considering the nature of Russian air power reform this paper seeks to inform readers interested in Eurasian security now and in Russia's ability to balance against future threats. The reader is invited to note that in the main this paper has not drawn on evidence from original Russian sources due to language constraints and that the Russian material that is cited, including print media, was translated from the original Russian source.

Early Post-Soviet Reform

Before the collapse of the USSR the Russian military totalled 4.9 million active duty servicemen and a further one million were attributed to the Warsaw Treaty Organization. After 1991, severe budgetary cuts made this force utterly unsustainable and led to significant cuts to personnel and equipment. These reforms came out of necessity to amalgamate the remaining forces rather than being motivated by a desire to improve efficiency or organizational structures, as such they were poorly managed and failed to properly integrate the remaining forces.²

Military aviation suffered from steady deterioration after the forced dislocation of the former Soviet air forces' structures when the new Russian Air Force (*Voенно-Vozdushnye Sily* (VVS) was formed after the breakup of the USSR. In addition to significant immediate aircraft losses, the VVS and aviation assets of the land and maritime components continued to be reduced in the years that followed. The decline in the number of aircraft platforms from a high of 13,000 in 1990 also reflected the steady decline of the Russian economy during the early post-Soviet period. Russia's gross domestic product (GDP) declined, on average, by nine per cent annually from 1990.³ In terms of equipment, the average annual purchase of 400 new aircraft during the 1980s was significantly reduced to only 77 new aircraft by 1992. This number continued to reduce throughout the decade.⁴ New aircraft development was also severely constrained. Sukhoi's development of the T-60, (required to replace the SU-24 and Tu-22M3 medium bombers) ceased and production of the Tu-160 heavy bomber was cancelled in 1992 after only 38 of the planned 100 platforms were built. Of those that were built, many remained in Ukraine after the fall of the USSR.⁵

Despite the necessity of the reforms there continued to be resistance to learning and those in positions of power and influence held tightly to their traditional structures and practices, in large part to retain their own influence. The culture of fixation on logged procedures and resistance to change characterized the Soviet air forces leadership during the Afghan war when returning squadrons of aircrew were split-up and redeployed to dispersed postings in order to reduce the strength of their calls for changes to standard operating tactics and techniques, based on their recent experiences. The desire to transform the air forces was seen as a potential threat to the existing senior air force leadership, who silenced the operational lessons to preserve their own authority. This failure to learn from the flexible employment of air power in irregular warfare was a significant shortcoming of the leadership at the time and symbolic of the continued resistance to transformational change in the early post-Soviet era.⁶

The Wars in Chechnya

Background

With a history of Chechen resistance to Russian occupation dating back to the nineteenth century tsarist expansion, calls for autonomy grew in intensity after the fall of the USSR. In 1991 the Chechen people elected their own leader and declared independence from Russia. Russia took no direct action against the secession until 1994 when President Yeltsin acted

in support of the opposition to President Dudayev and initiated an economic blockade of Chechnya. The growth of Russian sponsored opposition ignited deeply held clan rivalries and led to the outbreak of civil war. Although Russia supplied military hardware to the opposition, they failed to make significant progress. Russia finally issued an ultimatum, which subsequently led to the beginning of the first Chechen war. Despite significantly superior military power, however, Russia failed to gain the initiative and was forced to sign a truce in 1996.

From 1996 – 99 Russia restrained itself from involvement in Chechen affairs, but the failure to provide economic support to help rebuild Chechnya, exacerbated by the underlying factors of clan allegiance and historical aversion to Russia, resulted in the decline of Chechnya's economic and political situation. By September 1999 Chechnya was considered a significant enough threat to the North Caucasus to justify a second Russian military action.

The Utility of Air Power

In the first Chechen war the Russian air component principally consisted of 140 VVS fixed-wing combat fighters and 55 army aviation (*Aviatsiya Sukhoputnykh Vooysk*, (ASV)) helicopters. Each formed ad hoc air groups and, significantly, remained under separate command. Air power was utilized in three phases: reconnaissance and transport in preparation for the war, Counter-Air Operations (CAO) to achieve air superiority and freedom of movement for troops on the ground and finally supporting the advancing land forces through Offensive Air Support (OAS) operations against designated ground targets.

The main success of air power in the first Chechen war was the effective use of CAO, which allowed Russia to quickly gain air superiority and to maintain it throughout the campaigns. At the outset of the first Chechen war, the Russian forces easily defeated the very limited Chechen air defences, (which consisted of only 5 combat aircraft and 2 helicopters), in just three attacks within a 24 hour period on 1 December 1994. Additionally, the Chechen's did not have an integrated air defence system, but relied on small numbers of anti-aircraft artillery and man portable air defence systems (MANPADS).⁷ With the Chechen air force destroyed, Russian aircraft maintained air superiority through combat air patrols, enabling their aircraft complete freedom of movement and preventing the possibility of Chechen air support (from adjacent countries) that might threaten Russian nuclear and other military assets and industries from attack.⁸ A successful tactical strike by a Russian Frogfoot also resulted in the death of the Chechen President on 22 April 1996 and dealt a strategic blow to the Chechen military and political leadership.⁹

However, despite the advantages of air superiority, the first air campaign failed to effectively prepare the battle-space for the arrival of ground troops. When Russian ground troops entered Chechnya on 11 December they met with significant armed resistance. Despite having Control of the Air (COA) it took a month for Russian forces to fight through to the outskirts of the Chechen capital. When Russian troops finally began their assault on the

city of Grozny on New Years Eve, they were still not able to achieve victory. They were not trained or equipped for irregular, urban warfare. They were unable to use their large mechanized formations and therefore resorted to relentless aerial bombardments, with significant civilian casualties, to try to break the will of the Chechen people and gain access into the city.¹⁰

Significantly, the lack of a unified air component command led to failures in the joint use of VVS and ASV air assets in the first Chechen war. However, this was a key lesson that the Russian military leadership learned from and employed in the second Chechen war. In 1999, the newly amalgamated and centralized VVS command enabled the better coordination of all military aviation, in conjunction with other military assets. This time the war began with a dedicated four-week air campaign that targeted military installations and key infrastructure. During this second campaign the VVS leveraged the advantage of air superiority and better prepared the battle-space for Russian ground troops to advance. Operating under a unified command significantly improved the coordination of the air component and as the campaign progressed the improved command and control of the joint forces drew effectively on a more considered, pre-planned strategy.¹¹

However, the economic limitations that characterized Russian air power in the first Chechen war, continued throughout the second Chechen conflict. By February 2000 the war had already used 60 per cent of the VVS annual budget.¹² Communication failures continued as a result of poor radio equipment and procedures. Russian radio transmissions continued to be intercepted by the Chechens throughout the Chechen wars. Ground commanders were reluctant to inform aircrews where their troops were positioned and Chechen forces sent inaccurate instructions to Russian aircrew. These interceptions severely undermined Russian command and control of air operations in both of the Chechen wars.¹³ Both insufficient training and poor equipment serviceability also impacted flying operations, which were exacerbated by the lack of recent flying experience. The average annual flying hours of VVS pilots was only 30 per year, significantly below the internationally recognized minimum.¹⁴ Inadequate flying hours also contributed to the average of one helicopter loss per month during the second Chechen war.¹⁵ Furthermore, multiple incidents of fratricide, such as the destruction of the special police unit, which was wiped out by VVS in March 2000, were also due to the insufficient air-land integration that characterized the poor application of air power throughout the Chechen wars.¹⁶ On reviewing the operations in Chechnya, Kornukov, the VVS commander, recognized the necessity to implement a range of further improvements including "maintenance of aircraft and equipment, training and the number of pilots and troops, upgrading aircraft..., combat readiness of units and airbases, command and control structure of air power as well as directives on the application of air power".¹⁷ However, funding restrictions prevented the implementation of his proposals.

The use of air power in Chechnya was also limited politically by the negative strategic impact of the significant number of civilian casualties in both of the Chechen wars. The lack of precision

guided munitions (PGMs), which amounted to only 2.3 per cent of the munitions used, as well as insufficient night and all weather capability meant that collateral damage resulting from aerial bombardments in urban areas was unavoidable.¹⁸ Due to a combination of domestic and international pressure, President Yeltsin ordered that aerial bombardments be halted on numerous occasions for fear of losing Russian public support.¹⁹ Yet, despite the large number of civilian casualties, the bombardments did not discourage the Chechen fighters or destroy the will of the Chechen people and therefore the use of air power in this context was unable to achieve a decisive effect.

Overall, the use of air power in the first Chechen war was limited organizationally, economically and politically. Some lessons were successfully adopted in the second Chechen conflict, most notably improvements in command and control. However, limited funding meant that there was insufficient money available to make the more costly improvements to deliver better combat readiness and more modern equipment. As such there was little change in the use of weaponry and tactics in the second Chechen war due to ongoing budgetary pressures.²⁰

Structural Reforms

Organizational Structure

After the poor performance in the first Chechen conflict, the merger of the VVS and Russia's independent Air Defence Forces (*Voiska Protivovozdushnoi Oborony* (VPVO)) began in 1998. The merger sought to transform the force from "extreme disrepair, ill-equipped, ill-trained, ill-disciplined, significantly corrupted, criminalized and demoralized," and create a single more effective and capable command.²¹ At the time the merger was seen as the largest restructuring in the history of the Russian military and had been strongly resisted by the leadership of each service, as it also involved downsizing (from 225,000 personnel in 1998 to 185,000 by 2000).²² However, the unification and reduction of force structure from 100 to 70 aircraft regiments, made practical sense to improve efficiency and to raise the serviceability rate of the remaining aircraft.²³ In 1998 serviceability was a major issue across the aircraft fleets, of note the bomber fleet was only 50 per cent in-commission, with 75 per cent of the Tu-95 aircraft in need of major servicing and only six Tu-160's able to fly.²⁴

The merger, brought together the nation's air "sword" and "shield", simplifying the processes to "coordinate interaction between formations and units in their joint interests and to maintain combat readiness with stringent constraints on all types of resources".²⁵ By 1999 the former Long Range Aviation command assets and all the military transport aircraft were allocated to the Supreme High Command in Moscow. In addition to the establishment of two independent air corps the former VVS fighters and ground attack aircraft and the former VPVO interceptors were reorganized to form four new air armies.²⁶ However, the over-complex organizational structure of the air forces was only one of the factors that had limited the effectiveness of air power in the Chechen campaigns. Despite improvements in the structure, challenges remained regarding equipment, training and funding that would continue to limit the new VVS throughout the next decade.

Equipment

Although the single organization did simplify command and control, the VVS still sought to maintain a significant aircraft inventory. Without the funds for new aircraft the large and aged fleet continued to stretch resources beyond their means and threatened block obsolescence. The acquisition of new platforms had declined dramatically throughout the 1990s. In 1997 VVS was only able to purchase 6 new aircraft and this reduced to zero the following year.²⁷ The agreement in 1999 by Ukraine, after extensive negotiations, to transfer 11 of their most serviceable aircraft (eight TU-160 and three Tu-95 MS bombers), and 575 Kh subsonic cruise missiles, to Russia, was a unique windfall for the VVS and enabled the Service to fully equip one heavy bomber regiment consisting of 15 aircraft.²⁸

Despite recognition of the requirement shortfalls during the Chechen campaigns, there was little improvement in the paucity of equipment upgrades. By 2001 it was estimated that less than half of the VVS inventory was serviceable, with 32 per cent believed to be permanently unserviceable, and the situation was expected to deteriorate as many aircraft moved closer to their out of service dates. This led to the routine practice of aircraft cannibalization, even though it was known to result in a higher flight safety risk. During the reorganization, there were instances where engines were removed in their entirety after one aircraft had been relocated so that the engine could be returned to the original base by road, and then fitted into a different airframe to enable that to fly to the new base.²⁹ Moreover, after years of underfunding, a significant number of Russia's airfields were in dire need of repair work. Although there were some future aircraft development programmes ongoing, notably those to produce a competitive Russian fifth generation fighter, these also seemed to have little prospect of reaching operational capability.³⁰

Training

The lack of adequate professional training, which had been a significant issue during the Chechen campaign, was further restricted by the reduction of resources, which resulted from the structural reorganization of the air force. The undergraduate pilot training programme was further shortened to reduce costs, placing additional pressure on frontline units who were in receipt of aircrew with very limited skill sets. One key area where more training was required was the provision of flying hours for pilots. The vastly inadequate training and lack of currency were significant contributing factors to the Russian average of one air accident every 30,000 hours, in comparison to the US average of an incident every 80,000– 100,000 hours flown and little was done following the Chechen campaign to address the shortfall.³¹ Indeed, there was a marked decline in continuation training from two million hours flown in 1990 to just 200,000 hours across the whole VVS in 1999.³²

The further reduction of training also affected engineering, which led to greater errors in serviceability, degraded flight safety and reduced combat readiness. The merger significantly reduced the number of training establishments under the single command. In 1999 six of the training establishments belonging to the former VVS and VPVO were closed. It was also

no longer possible to offer profitable training for foreign students in its military education institutions, as they were scarcely adequate for Russian requirements, let alone worthy of payment by foreign customers.³³ There were also new issues that arose from the different levels of training and experience of aircrews from the separate establishments. While VVS crews were able to deploy to alternate operating regions, VPVO had limited experience that focused on operations from a single base. As such the merger highlighted various issues including the different organizational cultures, assorted equipment types and levels of experience; these all challenged the efficiency and interoperability of the new structure.

Budget

After years of steady decline, Russia's GDP began to rise again in 1999 by just over three per cent in real terms. This was in large part due to a rise in commodity prices, especially oil, enhanced by the devaluation of Russian currency against the dollar in 1998, which raised the competitiveness of the Russian export market.³⁴ However, despite Russia's improving economic situation, this did not immediately translate to a fully funded military. Russia's defence budget for 2000 was still only \$5 billion and the new united air force received less than half of its requested budget in its first year, most of which was required to pay for its reorganization.³⁵

With limited funding there was little scope for new procurement, which declined further in the late 1990's, with a further negative impact on the defence industrial sector, which depended on military procurement as its mainstay. The limited military budget was also a significant factor in poor morale and inadequate provisions for personnel. In 1998 there were reportedly over 30,000 military personnel and families without adequate housing, with an average waiting time for entitled accommodation between six and seven years. There are also repeated examples of units failing to receive pay for several months.³⁶ The officers in the air transport regiment highlighted the severity of the situation by going on hunger strike in protest of not receiving their full wages for 11 months.³⁷

To bolster their funding, the VVS were able to use their transport aircraft to earn income from commercial passenger and cargo flying, however, this drew on already limited military resources for maintenance and reduced the flying hours available for training and military activities. Moreover, the money earned went little way to pay for the costly exercise of the structural transition and for underfunded airfield and equipment repairs as well as personnel costs such as housing. Russia's inability to adequately fund the necessary personnel, equipment and training reforms to modernize their military aviation continued to be a significant issue.

Georgian Conflict

Background

After coming to power in the Rose Revolution in 2003, Mikhail Saakashvili invested significantly in the Georgian military, with financial assistance from the international community.

However, the Georgian ambition to join NATO, in the context of US recognition of Kosovan independence, was a significant challenge to Russian authority in the post Soviet space. There were months of heightening tensions between Georgian troops and the armed factions in the self-proclaimed republics of Abkhazia and South Ossetia. Finally, the Georgian artillery assault on Tskhinvali, South Ossetia's capital, provided an opportunity for Russian peacekeeping troops to make a stand and to try to rebalance the power in the region.

The Utility of Air Power

Characterized by the Russian political leadership as a "peacekeeping mission", the conflict that began on 8 August 2008 lasted just five days.³⁸ During this period, Russian aircraft completed several hundred sorties, targeting key military installations, including Georgian airfields, in order to restrict Georgian mobility and to gain COA. The nature of the air campaign altered as the conflict progressed from a focus on pre-identified targets to Close Air Support (CAS) as Russian troops advanced. Unlike the Chechen air defenses, Georgia possessed a modern Surface to Air Missile (SAM) threat which was much more difficult to counter than in the Chechen campaigns, but despite this, the Russian air campaign in Georgia helped to secure a decisive military advantage for Russia in a very limited time-frame.³⁹

The air campaign was a success because Russia employed many of the lessons learned from the conflicts in Chechnya in their action in Georgia. In particular, operations were directed through a coordinated command and control platform, which enabled Russia to more effectively use air power for locally targeted bombardments to give Russian forces the advantage on the ground.⁴⁰ The speed and coordination of the Russian forces was a significant factor in their success. "Within three days a powerful alignment of forces and equipment was assembled under extremely difficult natural conditions, capable of effective action and inflicting quick defeat on a numerically equivalent enemy".⁴¹ Even before the war began Russian air assets were involved in intelligence gathering and defensive maneuvers that enabled them to rapidly seize the advantage when hostilities broke out. Despite the modern Georgian military, and in contrast to the Chechen experience, the Russian action was "quick, energetic, and sustained", likened to "a powerful blitzkrieg".⁴² Improved coordination between air and ground troops enabled much more effective CAS in the final phase of the conflict and ultimately enabled the "demoralization and retreat" of Georgian ground forces.⁴³

Despite the overall success of the Russian military during the five-day war, the VVS had not been able to fully implement all the lessons from the Chechen wars, principally as a result of the underfunding of training and new equipment. First, there were a high number of Russian aircraft losses which demonstrated the persistent limitations in aircrew flying hours and aircraft serviceability. Although better than in the Chechen conflict, Air-Land integration was still incoherent due to inadequate procedures, training and equipment.⁴⁴ Despite improvements in joint command and control, the Georgian example demonstrates the repetition of fatal mistakes in coordination and the same "insufficient coherence at the tactical level" that was seen in the Chechen examples.⁴⁵

Political limitations restricted aerial strikes to military targets in order to limit damage to civilian infrastructure; however, aerial attacks still resulted in some civilian casualties. Although collateral damage was much reduced in comparison to the all-out bombardments of the Chechen campaign, this was mainly the result of the limited number of offensive sorties rather than the improved tactics or the use of PGMs. Air power in Abkhazia was focused primarily on supporting fighters in their advance up the Kodori Gorge, but in supporting the ground troops, the air strikes reportedly went “beyond the minimum”, signifying the failure of Russian aircrews to employ appropriate proportionality and to minimize collateral damage.⁴⁶ Although to a lesser extent in Georgia than in the Chechen examples, the continued use of indiscriminate weaponry, (especially the use of cluster munitions), and lack of modernized PGMs, together with heavy-handed tactics, resulted in potentially avoidable civilian casualties.⁴⁷

Lessons Learned

Although there is evidence of improvements in the application of air power in the conduct of the Georgia war, there were also a number of limitations that need to be addressed. One key weaknesses of Russian air power in this campaign was the insufficient attention paid to the Suppression of Enemy Air Defences (SEAD). This had not been applicable against the limited air defence capability of the Chechen Forces. However, in Georgia the lack of recent experience against sophisticated enemy air defences meant that SEAD was not carried out to the full extent necessary and, therefore, the Georgian forces continued to be able to limit Russia's COA throughout the campaign. The Georgia war served to highlight the deficiencies in Russian training, equipment and tactics when faced with the more sophisticated capabilities of a technologically advanced opponent.

These ongoing issues demonstrate that campaign success in Georgia “should not be a cause for euphoria in Moscow, but rather a stimulus to accelerate military transformation including the mass procurement of modern armaments for the Russian Armed Forces”.⁴⁸ The Russian political leadership heeded the warnings long advocated by the VVS leadership, recognizing the need to “focus on the modernization of our armaments” and in September 2008, President Medvedev set out five clear areas for improvements that marked a turning point in Russian military reform.⁴⁹

Military Reforms in the Wake of the Georgian Conflict

Despite its expediency, the military limitations revealed during the Georgia war invigorated the Russian political and military leadership to renew their efforts to transform the capabilities of their armed forces. President Medvedev ordered that a “new configuration” of Russian armed forces was required to address the shortcomings exposed during the conflict, but also to counter the rising global threats, including US efforts to create global missile defences, NATO establishment of military bases in Russia's near beyond and further expansion into the post-Soviet space. It is also possible that the failure to address the earlier lessons from the Chechen conflicts provided motivation for the necessity of wider reaching reform.

The promotion of Lieutenant General Vladimir Shamanov, a veteran of the Chechen conflict, to commander of the elite Russian Airborne Forces has been regarded as evidence of this.⁵⁰

At the outset of this new era of transformation, the Russian Defence Minister asserted that the reforms were a shift from a mass formation based on attritional warfare to a more capable, performance orientated, mobile and optimally armed force that could readily engage in at least three local and regional conflicts. They sought to go further than any of the previous plans. The reforms called for a reduction in the total size of the military from 1.2 million in 2008 to below one million by 2012. The main aims also included the acceleration of the planned reduction in the officer corps from 355,000 to 220,000, and the rejuvenation of training of non-commissioned officers (NCOs) to increase their effectiveness. The reforms aimed to further simplify the command structure, reducing it from a four-tier command hierarchy with military districts, armies, divisions and regiments, to a two-tier structure with a simple strategic command and subordinate, fully manned brigades which could maintain a higher readiness for combat. The VVS reforms reflected this overall strategy, prioritizing personnel restructuring and seeking to gradually re-equip the force with more modern aircraft by 2020.⁵¹

Organizational Structure

The most recent structural reforms have signified a distinct move away from the traditional Russian divisional-regimental organization to one based on brigades, more reflective of other modern militaries. This has been particularly apparent in the simplification of the command and control system, which has been reduced to a three-link structure from military district, operational command to brigade.⁵² This has sought to amalgamate disparate, partially staffed units and to bring them together to form smaller, better trained and equipped more manoeuvrable units. The six existing military districts have been rationalized to four larger districts, which has affected all three of the military branches.⁵³ Of note, each of the commanders of the new districts or Joint Strategic Commands (JSCs) has authority to command the personnel and equipment located within their area of responsibility, regardless of their different military branches. This streamlining of the chain of command is designed to reduce bureaucracy and increase the control of communications especially during operations.

The additional organizational reforms, including the introduction of the brigade system, have affected all three military branches to differing degrees. During 2009 the Army was the branch most significantly affected by the restructuring when 203 partially staffed divisions were amalgamated to form 83 brigades, the number of tanks was reduced by almost half and the overall manpower was cut from 400,000 to 270,000 troops. The Navy was less affected by organizational changes, with the greatest emphasis on the new acquisition of surface vessels and submarines. As the air force had already undergone some effective restructuring, with the amalgamation of the VVS and VSPO, the change to the three-tier system, replacing divisions and regiments with airbases and squadrons, was less complex to implement after 2008. From 340 units in 2008, the VVS was reduced to 180 by 2012.

The introduction of combined, multiplatform bases was also a notable departure from the traditional single platform model. The VVS have amalgamated their forces at 15 bases, with between 150 – 200 aircraft at each one. This has provided benefits of greater command coordination, cohesive training and the rationalization of bases, but the unwillingness to fully close any of the abandoned bases may yet prove to be an expensive mistake. Even under minimal maintenance base running costs will continue to draw on limited funds and without adequate investment they are unlikely to provide a useful option for future basing. It is still early to say how effectively these complex joint bases will conduct operations. There have been some reports of how the significant numbers of different types of aircraft trying to operate on some bases have overly complicated both ground manoeuvre and airspace operations and led to fears over de-confliction and flight safety.

There have also been ongoing issues with some of the earlier joint reforms, especially with the move of Army Aviation units under the command of the VVS. The most recent shift brought Naval aviation under VVS command from April 2011 causing further tensions.⁵⁴ It is yet to be demonstrated that these combined commands can deliver the improved coherency and efficiency of operations that was so significantly lacking in the Chechen and Georgian conflicts. If they are to deliver the best results, then there will need to be greater significance attached to the way that the units train and operate together, as well as ensuring that their communication systems are compatible. Without these additional considerations, the shift in command structure will be unlikely to result in joined-up operations in the future.

Personnel

The recent reforms have sought to reduce the total military headcount to below one million by 2012. Although the largest reduction has been to the ground forces, the air force has also seen its strength reduced from 167,000 to 148,000.⁵⁵ This has also redressed the officer to NCO balance, reducing the total number of officers by 50,000 over three years.⁵⁶ Whilst empowering lower ranks will be important to create a more sustainable personnel cadre, the reduction of senior rates, especially the proposal to eliminate the warrant officer rank (WO), has posed one of the greatest risks to the VVS as it risks deleting invaluable technical knowledge and engineering maintenance. Most of the aircraft technicians, across the different fighter and bomber platforms, hold the rank of WO. There are severe doubts whether the plan to reduce the WO cadre by 100,000 and replace them with 'professional' sergeants can be funded, manned or trained to deliver the necessary expertise.⁵⁷

One of the biggest shifts across the military has been the transition to a much higher number of professional 'contracted' personnel. Although this policy had been launched back in 2003, it had failed to be delivered. In the wake of the Georgian war there was greater emphasis placed on the urgency to professionalize the skill sets of the armed forces, especially in highly technical areas such as aircraft maintenance, and to reduce some of the social issues related with conscription. Up to one in four of those who reported for air force duty in the Georgia

war were from single parent families with one in 10 having used drugs. This of course reflects the wider social challenges in Russian society, but the necessity to maintain a significant proportion of conscripts is an issue that will continue to challenge the military as it tries to reform.⁵⁸ The ongoing shortage of funding meant that in 2010 a large number of contracted personnel had to be discharged. This regressive step was highly criticized for risking a further dilution of the level of skilled personnel, but although there has been a renewed call to raise the number of contract personnel to 450,000 by 2017,⁵⁹ whether the necessary funding can be brought to bear to fully implement it is still to be seen.

In recognition of the ongoing need to attract high quality recruits, President Medvedev has supported the increase in basic pay. While raising pay in line with performance may provide a valuable incentive package, this alone will not deliver long-term solutions if the inadequate conditions, especially the lack of family housing, are not also addressed.⁶⁰ This will require significant investment, but will be vital to securing the right calibre of recruits to help to deliver an effective and capable air force in the future.

Equipment

A 10-year weapon modernization plan was launched to address the shortfalls identified by the Georgian campaign and has recently been revised out to 2020. The plan prioritizes equipment in line with the strategic nuclear deterrent but also identified significant procurement for each of the arms of service. For the VVS the programme includes the procurement of 600 new fixed wing and 1000 new rotary wing assets, which should go some way to helping to reduce the aircraft attrition rate, if complemented by the necessary training and flying hours. The equipment plan also includes significant capability modernization to address some of the most marked shortfalls of the recent conflicts including night vision capabilities and air defence systems. The acquisitions also include a 18-fold increase in PGMs and a 4.5-fold increase in all weather and night capability upgrades. There is also planned to be a six-fold increase in UAVs, which will form 30 per cent of all VVS assets by 2020.⁶¹ The purchase of UAVs is hoped to also reduce the costly pilot training burden and to minimize operational costs for the VVS.

The poor state of Russian equipment in the Georgian conflict led to the recognition that to remain competitive and capable, the military required some externally purchased equipment to supplement the organically developed capabilities. This has continued to be a controversial issue amongst both the political and military leadership. However, there can be little doubt that some advanced technologies could not be provided within the same budget or timescale using only domestic technology and production.

The VVS has already benefitted from new acquisitions due to reinvigorating ties (sometimes aggressively) with defence companies in the former Soviet-space as well as forging new international industrial partnerships to provide some of their latest equipment and upgrades. In 2009 Russia purchased 12 UAVs from Israel Aerospace Industries, demonstrating its

determination to modernize at the expense of sovereign technology. Russian forces gained first-hand experience of the capabilities of these platforms when they faced them in the hands of Georgian forces in 2008. The Israeli technology is much more advanced than that of Russian UAVs. To ensure full operational capability the Russian agreement has also included the necessary operator training for Russian pilots. The agreement was followed by a further joint venture to develop a longer-range UAV in the future. However, this programme has been put on hold over fears that Russia may seek to sell-on the technology and has forced Russia to reconsider costly indigenous development.⁶²

UAVs have not been the only international air force collaboration. Other programmes have included the supply of French Sagem inertial navigation systems for both MiG and Sukhoi aircraft that are also available to the Russian export market.⁶³ There has also been a renewed focus on developing a fifth generation fighter to rival the US F-22 and the multinational F-35. The Sukhoi T-50 has been undergoing extensive trials and achieved its first supersonic flight in January 2011. However, although development of this aircraft appears to be progressing well, the procurement plan, which includes a cut to R&D of 10 per cent of planned spending, will make technology development a continued challenge in the future.⁶⁴ Closer ties with multiple defence industrial partners like India are therefore likely to be Russia's best option.⁶⁵

Training

Significant steps have been taken in terms of the reform of military training and education, which have been created in line with the more effective US programme.⁶⁶ Despite some of the structural reforms, such as the creation of JSCs, removing branch authority over their personnel, the responsibility for training has remained branch specific. Overall military higher education has been significantly streamlined from 65 down to 16 institutions. These include individual military training and science centres for each of the branches, 11 military academies and two universities. However, intention to reduce the educational and training establishment of the VVS to a single centre, may risk the oversimplification of the different training requirements for a modern air force.⁶⁷

One of the key issues has been the need to develop an effective thinking NCO, capable of problem solving at lower levels in the command chain. As part of the longer-term development of potential recruits the President announced the plan to establish eight "presidential cadet schools" which would increase pre-induction training and boost the attractiveness of military careers.⁶⁸ To address the significant shortfall in NCOs with adequate training, 5,000 junior officers were reassigned after graduating in 2009 – 2010, to serve as NCOs.⁶⁹ This example highlights the uncoordinated nature of some of the reforms, and the importance of getting the education and training organization and through-flow correct in order to deliver the right number of adequately trained personnel to the front line branches. The VVS still needs to devise a longer-term solution to engender an ethos of 'mission command' as ad hoc fixes do little to instil the required cultural change.

There is little evidence of substantial training reform to address the issues of limited aircrew competence that resulted from the truncated training pipeline. However, the increased availability of fuel supplies has enabled the average crew flying hours to be raised to between 80 and 100 hours a year.⁷⁰ It is likely that more attention to training will need to be paid if the VVS is to retain a required level of human capital, especially when operating new and advanced platforms in the future. In the complex modern battlespace, in local conflict or operating in support of more strategic missions, motivated and capable personnel will be required to optimize the effects that Russia seeks to achieve.

Budget

The defence budget allocation for the post 2008 transformation also reflected the turning point in the nature of reform and included a substantial increase on that of previous years to three per cent of GDP. It is estimated that Russia's 2011 military budget was the fifth largest in the world, and likely to soon surpass France and the UK if austerity plans continue to bite across Europe, in contrast to Russia's planned increase in military expenditure to four per cent of GDP by 2015.⁷¹ However, the ambitious reforms have still been dependant on significant personnel reductions and far reaching structural reforms in order to free-up the requisite funds for enhanced training and new equipment capabilities.

Procurements appear set to rise significantly in line with the new \$698.4 billion State Armaments Procurement Programme for 2011 – 2020. In recognition of the challenge of modernizing Russia's vast inventory, the plan notably increases overall spending from the earlier 2007 – 2015 plan. However, modernization is progressing at a painfully slow pace, as adequate funds are not being made available to meet the requirements. Increasing development costs and delays have continued to affect new platforms such as the SU-35 fighters and SU-54 bombers, which are straining the already tight budget and threaten to undermine the overall success of the planned reforms.

Ongoing Challenges

Although progress has been made, the reforms have faced daunting delays, modifications and countless setbacks. Even as early as August 2009 General Zelin, Commander in Chief of the VVS indirectly acknowledged the plethora of challenges that this modernization would create. While President Medvedev announced in March 2010 that the reorganization was complete, with the total number of personnel reduced below one million, this belied some of the most demanding reforms that were yet to be tackled, in terms of equipment modernization and ongoing education and training to increase combat effectiveness.⁷² In terms of training, only 56 per cent of the planned command post training had been conducted during recent winter programme, reflecting the complications of organizational and personnel changes. There was a 13 per cent increase in flying hours, compared to the same period the previous year; however, the introduction of new platforms will require a much more significant increase in both time and money to ensure that training in the air and in terms of maintenance is conducted safely.

Noting the ongoing challenges of introducing more modern aircraft, Zelin questioned whether the VVS could actually accomplish their goal of transformation; “manned aviation will not by 2025 be in a position to accomplish the requisite quantity of missions in a local war”. Zelin’s comments about the inability of the future air force to conduct operations in a local conflict made him the first service commander to question the validity of the far-reaching reforms. These comments are likely to have been a reflection of inter-service rivalry, with the VVS commander wishing to influence a larger proportion of the defence budget. There is much unease over bypassing Russian defence industries in favour of foreign competitors, and the budget for defence is still orientated towards the strategic deterrent, acquiring naval platforms and developing intelligence gathering capability, raising the question as to whether the conventional capabilities of the VVS will indeed be sufficiently enhanced.⁷³

It therefore remains highly uncertain that the necessary budgetary and indeed demographic resources will be able to be brought to bear to deliver an adequately trained, professional air force with a considerably modernized capability and high readiness within the next decade. Moreover, the ongoing reliance on the domestic defence industry will also require substantial investment in both human capital and financial resource if it is to play its part in delivering sovereign capabilities of a significant enough quality and volume.

The Nature of New Reform – New Capabilities in the Image of the US

Despite the substantial reductions in the Russian armed forces, with over one million active personnel in 2011, their military is still the fifth largest in the world (exceeded only by the US, China, North Korea and India). Although overall defence spending has decreased, it remains one of the highest in the world. Russia has continued to focus its priority on its strategic nuclear capabilities, however, the changing nature of the threats in its regional and local sphere have necessitated a re-evaluation of its conventional capabilities. Although the most recent military reforms have gone further than earlier ones, there is still much debate over the short-term and longer-range effects of Russia’s military modernization. The latest reforms have been markedly different from those which have gone before; they are far more wide ranging and are more closely aligned to the US military model in terms of their formations and training. This demonstrates a significant shift from the continuation of a more traditional Soviet-style leadership throughout the earlier reforms, and if effectively institutionalized, bodes well for the utility of the armed forces in combating more modern threats in the future.

One key area of debate is the nature of Russia’s intended outcome. Is Russia seeking to recreate the superpower capabilities of the Soviet-era, reconstituting armed forces that can deliver global reach in order to dissuade international interests in the traditionally Russian global space, or is its interest to adopt a military that reflects the US capabilities of a smaller, highly skilled and more professional homeland security and counter terrorism role? The intentions of Russian leadership appear somewhat inconsistent. Although the recent reforms appear to focus on more modern missions, the increase in Russian long-range strategic

flying over the Atlantic, Pacific and Arctic oceans appears to be more in line with the posturing of a would-be superpower than a state concentrated on internal security issues.⁷⁴ Moreover, when the Commander in Chief of the VVS outlined his plans to enhance Russian airpower, he indicated that the new extensive reforms were necessary to counter the “threat” posed by the US as well as future local conflicts within Russian boarder regions.⁷⁵

While there is still evidence that the reforms are in part driven by Russia’s perception that the US and the expansion of NATO represent potential threats, there is also the possibility that a stronger Russia will feel less strategically vulnerable. There has been some opening to a greater dialogue on collaborative working regarding missile defence and an open engagement policy which seeks to try to enhance cooperation across arms reduction and a plethora of wider global issues which serve US and Russian mutual interests. Regardless of Russian intentions, in the face of significant challenges in terms of budget, demographics and technological development Russia is unlikely to be able to recreate its military in a superpower image, capable of delivering strategic effects on multiple continents.

Conclusion

Russia has undertaken a number of disjointed reforms of its armed forces since the dissolution of the USSR. Through detailed analysis of the recent conflicts in Chechnya and Georgia, we have considered how Russian air power developed through the lessons learned from these campaigns by evaluating the nature of Russian military reform. Despite some improvements in the late 1990s and early 2000s budget limitations and resistance to wide ranging organizational reform continued to inhibit the application of Russian air power. While the single organizational structure of the VVS did enhance command and control at the operational level during the Georgian war, this experience demonstrated severe shortcomings in tactics, training and equipment.

Although Russian military reforms had taken place before 2008, the nature of the reforms introduced in the wake of the Georgia war marked a turning point in Russian military organization and command. They have been wider reaching and coordinated in their approach, addressing significant organizational restructuring across the whole of the armed forces. The strength of both political and military will to modernize the armed forces has been a potent mix and has been instrumental in driving forward change. Replicating more modern military models, the air force has finally broken away from traditional complex structures and embraced joint concepts and more integrated unit and command structures. This more efficient framework has the potential to deliver the greater capability and professionalism that was espoused at the outset of the reforms. However, effective transformation will not be possible without the necessary significant investment and attention to developing and retaining the necessary human capital as well as equipment modernization.

There remain key challenges going forward. Aircraft modernization is happening but only slowly. Although some success has been achieved by partnering with international companies,

there is still resistance to full industrial cooperation on both sides; this will need to be addressed if Russia is to maximize the opportunities of industrial burden sharing. The issues of conscription and the declining social health of young military age Russians also pose a challenge to military modernization, education and professionalism. The VVS still has much to learn from its recent experiences and its future will depend on more than just technological upgrades. Overcoming some of the personnel issues to retain their best pilots and technicians, and investing in the right education and training to continue to develop modern procedures and effective command will be the key to delivering and sustaining a truly modern and capable Russian air force in the future.

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Viewpoints

Motion Intelligence and Air Power: A Concept

By Flight Lieutenant Keith Slack

Introduction

The conceptual foundations laid for the Royal Air Force by Viscount Trenchard, widely described as ‘Father of the Royal Air Force’, continue to this day.¹ However, these concepts have continually evolved. Technological advances and the perceived threat from potential adversaries determine the scale and direction of this evolution. The second strategic priority in the *RAF Strategy 2006* stated the need to develop an expeditionary air power capability ‘which takes full account of emerging threats, concepts and technologies’.² One of the key strategic priorities in the forthcoming *RAF Strategy 2012* expressly stipulates the need to ‘remain at the centre of the conceptual thinking on air power to ensure the exploitation of new ideas and technology to influence others’.³ In an air force of decreasing size, with less manpower, less aircraft and squeezed budgets, as well as an enduring high operational tempo, the need to ensure that conceptual thinking remains at the forefront of the application of air power has seldom been greater. Thus, this article proffers a concept called ‘Motion Intelligence’. It is not just about intelligence. It is about a type of intelligence collected from, acted upon, and facilitated by, air power.

A brief note is required on what this article aims to achieve. Firstly, it will demonstrate the importance of motion as a source of intelligence alongside an image, a signal, and a human agent. Secondly, it will demonstrate the importance of the height and reach provided by air power in the collection of Motion Intelligence. Thirdly, it will recount the technological developments that have facilitated this type of intelligence collection. Importantly, this article is not about procurement or a specific platform. Neither does it advocate the importance of one type of intelligence over another. In fact it is not just about British capabilities but includes

the ability to detect motion beyond the British inventory. This article is also acutely aware of the limitations of technical collection in understanding the 'social terrain'; there is only so much that can be understood using sensors from air and space platforms.⁴ It is about a concept first and foremost. At the very least, it is hoped that this article will demonstrate the value of air power in detecting motion as an intelligence source, and highlight its value within the mind-set of operational planners.

This article will initially explain what is meant by Motion Intelligence and a definition will be provided. Analysis of the historical and current application of Motion Intelligence will then be presented. This analysis will demonstrate that Motion Intelligence is not a new concept; it has been at the very heart of air power – and indeed warfare in general – since time immemorial. Delving into history is an appropriate and important precursor to advocating a 'new concept'. Finally, this article will look to the future of Motion Intelligence and how this concept may evolve. The proposition of this article is that motion is a valuable source of intelligence and that technological advances over the past decade or so have been revolutionary enough to warrant a category of its own. In a similar way to the re-organisation that occurred following technological innovations that facilitated the collection of imagery and signals, it is important to continually re-assess how we categorise, organise and implement our intelligence. Recent technological advances in our ability to detect motion warrant such a re-assessment.

What is Motion Intelligence?

Motion Intelligence could be defined as 'intelligence acquired from targets moving in either the air, land or sea environment'. Or to put it more succinctly, it could be defined as 'intelligence gleaned from that which moves'. For simplicity, the author prefers the latter definition.

As an acronym, MOTINT seems suitable. Primarily, therefore, MOTINT is about detecting the movement of a particular object and using this as a source of intelligence. This has obvious applications during conflict. Knowing where one's enemy is located is one thing; knowing when they leave this location, in what strength, in what direction they are travelling, how fast they are travelling, in what formation they are travelling, and when they arrive within striking distance of one's own forces, are all vital pieces of intelligence for any military commander.

The ability to collect MOTINT using modern sensors has dramatically changed how modern air forces operate. Detecting, tracking and attacking a moving target with any degree of accuracy is a relatively recent development. This development was encapsulated in an Adelphi Paper, *The Revolution in Strategic Affairs*, written by Professor Sir Lawrence Freedman in 1998. In this publication, Professor Freedman stated:

The major proposal of the early 1980s was concerned with deep strikes to the enemy rear, against fixed targets, such as bridges or airfields, and so played to the new technology's known strengths. There was far more scepticism about being able to track and attack with much accuracy anything on the move.⁵

Modern sensors that are able to detect motion fall into two distinct categories: motion imagery and Moving Target Indication (MTI). Broadly speaking, motion imagery includes any imaging sensor – whether Electro-optical (EO), Infrared (IR), Multi-spectral (MSI) or Hyper-spectral (HSI) – that collects imagery at a rate of one frame per second or faster.⁶ Motion imagery is not just about Full Motion Video (FMV), although this is probably the most well-known and most prolific type of motion imagery sensor. Motion imagery also includes those sensors that cover a wider area and fall under the NATO designation of Large Volume Streaming Data (LVSD).⁷ LVSD systems are more commonly referred to as WALF (Wide Area Large Format), WAMI (Wide Area Motion Imagery), WAPS (Wide Area Persistent Surveillance) and WAAS (Wide Area Aerial Surveillance).⁸ An article in *Jane's Defence Weekly* in August 2011 stated that wide-area motion imagery sensors 'are able to provide coverage of large areas of terrain and, in some cases, allow an operator to select a specific target and track it across the sensor's entire field-of-view'.⁹

MTI uses radar propagation to identify and locate a moving target.¹⁰ There are different types of MTI: Ground MTI (GMTI) which is commonly used to refer to the detection of vehicles, but with an additional capability to detect surface vessels in the maritime environment; and Dismount MTI (DMTI) which is used to refer to the detection of individuals on foot that have a much lower radar cross section.¹¹ Current systems that can collect this type of intelligence include the Sentinel R1 of V(AC) Squadron, E-8C Joint STARS of the USAF, the Royal Navy's Mk 7 Sea King Airborne Surveillance and Control (SKASaC) helicopter, Northrop Grumman's Vehicle and Dismount Exploitation Radar (VADER), the US Navy's P-3 Orion Maritime Patrol Aircraft, among numerous Remotely Piloted Air Systems (RPAS) that also carry an MTI sensor.

A fundamental question that needs to be answered is where would MOTINT 'sit' in today's intelligence construct? Intelligence has repeatedly been re-categorised following advances in technology. Imagery Intelligence (IMINT) started with rudimentary photography during the First World War, but it came of age during the Cold War with the development of satellite technology and there is now a national imagery centre. Signals Intelligence (SIGINT) initially began as the Government Code and Cypher School, but it gained pre-eminence during the Second World War and is also now a national agency. The categories of Radar Intelligence (RADINT), Acoustic Intelligence (ACINT) and Measurement and Signature Intelligence (MASINT) were also adopted as a result of specific technological advances, but these are abstract terms rather than specific agencies.¹² Open Source Intelligence (OSINT) is a recent development that has been facilitated by the information and communication revolution of the current age, but it is pervasive across all agencies.

So, where do the new technological innovations that detect motion fit into the current organisational construct? FMV is analysed by imagery analysts and 'sits' within the IMINT category. According to *JWP 2-00: Joint Operational Intelligence*, MTI should be categorised as RADINT because it uses radar;¹³ but which agency 'does' RADINT? Or, as others suggest, is MTI actually IMINT and therefore should be co-located with imagery? Some have suggested that MTI is MASINT but, according to the definition in *JWP2-00*, MASINT is based on emissions and

therefore this does not apply to MTI.¹⁴ Or, is it suitably different enough to be categorised as something completely unique? How would other wide-area motion imagery capabilities be incorporated into the current construct? How is SIGINT – which also incorporates an element of motion – correlated with MTI and motion imagery in today's organisational construct?

Answers to these questions are not superfluous. The answers dictate how we organise our intelligence. At the practical level they determine which categories of 'Int' are co-located into a particular building. Moreover, they determine what storage capacities, connectivity and analytical exploitation tools are provided to enable a specific 'Int'. Thus, in a similar way to the major re-organisation that occurred after the developments of IMINT and SIGINT, is it necessary to acknowledge that the technological innovations that detect motion also require a re-categorisation of our intelligence?

Historical Development / Operational Application

It is important to emphasise that motion as an intelligence source is not a new concept. Military Commanders throughout history have always tried to obtain advanced warning of the movements of their adversary. The sensors able to detect an adversary's movements may have developed, but not the concept itself. This section, therefore, emphasises continuity as much as it does change. The main changes, however, have primarily been the result of technological advances in the height and reach of air power. The ability to reconnoitre higher and over a greater distance was, is, and will continue to be, game-changing. Moreover, the technological developments in the sensors that could be utilised from these new flying machines have also been and will continue to be game-changing.

For an army, the professionalised ability to observe the enemy's movements is encapsulated by the Scoutmaster, a man appointed to 'discover the whereabouts and intentions of the enemy'.¹⁵ As described by King Henry VIII in 1518:

It is the office of the Scoutmaster when he cometh to the field to set and appoint the scourage, he must appoint some to the high hills to view and see if they can discover anything. Also the said Scoutmaster must appoint one other company of scouragers to search, and view every valley thereabouts, that there be no enemies laid privily for the annoyance of the said camp.¹⁶

But the scoutmaster was restricted by the highest vantage point to which he could locate his scourage. To overcome this limitation, Jacques Charles invented the hydrogen balloon (or the 'Charliers') in 1783. From an improved vantage point high above the battlefield the importance of this new invention for reconnaissance was obvious. He immediately set about advocating its military application by emphasising that they 'could be made very useful to an army for discovering the positions of its enemy, his movements, his advances, and his dispositions'.¹⁷ The invention of the aeroplane and subsequent technological advances further revolutionised the way in which an adversary was reconnoitred. The Italo-

Turkish War of 1911-1912 provides one of the first examples of aircraft deployed to collect MOTINT. Fighting against Ottoman dominance of North Africa, Italy deployed a large army, a considerable navy, and a handful of aircraft. The Italian pilots recorded the first wartime use of wireless air-to-ground and ground-to-air communications in their mission 'to reconnoitre the flanks and spot ambushes ahead of time'.¹⁸

Aerial reconnaissance during the First World War also demonstrated the importance of height and reach in detecting motion. Despite General Haig's admonition of the Royal Flying Corps (RFC) in 1914, the first commander of the British Expeditionary Force (BEF), Sir John French, recognised its value. He stated that the RFC had 'furnished me with the most complete and accurate information, which has been of incalculable value in the conduct of operations'.¹⁹ One of the best examples of MOTINT in the First World War is found in aerial reconnaissance of the movements of German forces in August and September 1914. It was a French aviator, Lieutenant Watteau, flying north of Paris who confirmed that German columns had indeed altered course and were not heading toward Paris.²⁰ The importance of the RFC in collecting MOTINT is further demonstrated by the following extract:

In the first weeks of the War, when the manoeuvrings of the ground forces were relatively fluid, RFC aircrew were utilised as the eyes of the army... These missions soon proved their worth and were the source of much useful intelligence. Attempts by the German Army under General Alexander von Kluck to outflank the British were detected from the air, enabling the BEF Commander, Sir John French, to escape the trap and earn glowing praise for the RFC.²¹

The use of air power as the 'eyes' for an army was not just confined to the First World War. The contribution of the First Aero Squadron to the Mexican Punitive Expedition in 1916 also demonstrated the importance of reconnaissance through the detection of motion. The First Aero Squadron, equipped with the JN-3 or the "Jenny", was tasked to detect the movements of guerrilla forces led by Pancho Villa that regularly made forays into American territory from Northern Mexico.²² Another example is provided by the First Air Squadron, operating the DH-4B, which deployed to the Dominican Republic in 1919 to support the US Marines who were tasked to protect American interests in the midst of a civil war. The crews were able to observe the movements of the guerrillas and provide intelligence on their current location and direction of travel that subsequently 'guided patrols to contact with the guerrillas'.²³ This was an early example of air-land integration and it represents a clear example of the provision of MOTINT by air power.

The Battle of Britain is an example of MOTINT *par excellence*. In the mid-1930s a technological innovation was being developed that would enable persistent, wide area surveillance to be conducted for the first time. The name Watson-Watt is synonymous with the technique of Radio Direction and Ranging, or radar. Radar was incorporated into a system of air defence, under the command of Sir Hugh Dowding, which also included fighter aircraft, the ack-ack guns of the army, the Observer Corps, barrage balloons and the air-sea rescue service.

The Chain Home and Chain Home Low stations along the British coastline provided enduring temporal persistence and vast spatial coverage for the collection of MOTINT. Across a vast geographical area, radar enabled the operators to locate the German aircraft, estimate the numbers of aircraft in a particular raid and track their flight path. Based on this information, it was possible to predict targets that the Luftwaffe was planning to attack and to subsequently scramble the most suitable RAF Squadrons and vector them toward the approaching aircraft.

The value of radar and MOTINT in this context is not just in its ability to provide advanced warning of an approaching air raid by the Luftwaffe. The real value of MOTINT was that it allowed an RAF with scant resources an economy of effort from which to win the Battle of Britain. Instead of Squadrons of Spitfires and Hurricanes patrolling Britain's skies without any semblance of purpose, the collection of intelligence through the motion of the Luftwaffe enabled the integrated air defence system to apportion assets to specific threats as they emerged. When there was no threat, the Squadrons of fighters remained on the ground. When a threat was detected, the squadrons were scrambled to a specific intercept. It was not always perfect and the intercepts were not always successful. But, the ability to allocate fighters to a specific threat through MOTINT, in both time and space, enabled an economy of effort for Fighter Command.

The utility of air power and the value of radar were also important in the collection of MOTINT in the naval environment. Prior to radar, air power relied on a visual search by aircrew to detect the location and movement of the enemy's fleet. However, technological advances enabled the capability provided by the massive masts of the Chain Home system to be incorporated onto an aircraft. Air-to-Surface Vessel (ASV) radar was in development in the late 1930s.²⁴ The first British airborne radar was flown in August 1937 on an Avro Anson. Tests confirmed that it was capable of tracking the movements of Royal Navy vessels. It even detected aircraft taking off from HMS Courageous. Operationally, it was installed on Coastal Command aircraft throughout the Second World War to detect, track and facilitate offensive action against German vessels and submarines. By 1943 the capability of ASV radar improved as advances were made in range and fidelity of detection. It was decisive in the Battle of the Atlantic as German submarines could be located and tracked with greater accuracy when they surfaced, even at night.²⁵ The ASV radar was also used by Wellington bombers operating from Malta to track Axis shipping supplying Rommel's forces in North Africa.²⁶ It was also used by long-range Catalina aircraft patrolling the Pacific to track the movements of Japanese shipping.²⁷ In a similar way to the use of MOTINT in the Battle of Britain, the introduction of radar in the naval environment enabled a more efficient use of resources, an economy of effort, and, importantly for targeting the German submarines, a concentration of force in both time and space.

Technology has further enabled the coverage attained by the Chain Home system to be incorporated onto an aircraft for surveillance in the air environment. The E-3D Sentry is employed in the Airborne Warning and Control System (AWACS) role to provide early warning of air threats. In much the same way as the Chain Home system, it can identify the movements

of an enemy's air force and control friendly aircraft in their fight to maintain control of the air. In some respects, it could be argued that the E-3D employs radar in an Air MTI (AMTI) role as a MOTINT asset. To further elaborate on what an AMTI capability incorporates, it could also be argued that the Principle Anti-Air Missile System on board the Royal Navy's Type-45 destroyer relies on an AMTI capability to track and counter air threats. Indeed, any early warning system, including a ballistic missile early warning system, is a further example of MOTINT through AMTI.

The analysis now turns to the detection of motion in the land environment. It was the outcome of the 1973 Arab-Israeli War and the threat from the Warsaw Pact that spurred US military planners to procure a system capable of detecting the motion of an adversary's land forces.²⁸ The decimation of Arab and Israeli fielded forces in 1973 by the lethality of new battlefield technologies demonstrated the need to know the exact movements of an enemy's front lines, its reserve forces and supply lines, as well as to detect when a course of action was being pursued. Identifying the enemy's advance through superior battlefield information and re-orientating one's own forces against this advance to ensure success was deemed essential. Thus, the US began the development of Joint STARS to provide superior battlefield information through the collection of GMTI. This would prove a revolutionary development in the collection of MOTINT.

It was during the 1991 Gulf War that GMTI was first used in a combat role. Two Joint STARS aircraft deployed to the region despite still undergoing considerable developmental testing. It was a new capability and many operational planners lacked an awareness of the platform's capabilities and limitations. Nonetheless, GMTI provided a unique viewpoint of the battlefield previously unseen. It was during the Battle for Al Khafji that GMTI information was most useful. During the Battle, Coalition air forces used GMTI information to locate, track and cue other platforms to attack and destroy the Iraqi ground forces when they were advancing toward Coalition ground forces.²⁹ Military planners also used GMTI to determine that the Iraqi ground forces' advance was not a deception for another advance but it was actually the main thrust toward the Coalition; this enabled the Coalition to achieve an overwhelming concentration of force against this attack without having to worry about other possible attacks.³⁰ In a broader sense, GMTI also provided intelligence on the Iraqi ground forces as they re-orientated and moved locations. This intelligence facilitated offensive air operations against these new positions.³¹ Toward the end of the conflict, as Iraqi forces withdrew from Kuwait, GMTI was also the 'source of timely, reliable information that enabled air attacks to disrupt the Iraqi retreat'.³²

Many US military leaders directly recognised the importance of GMTI during the 1991 Gulf War. Brigadier John Stewart, the Army's Senior Intelligence Officer, stated that 'Joint STARS was the single most valuable intelligence and targeting system in Desert Storm'.³³ General Walter Boomer, Commanding General, 1st Marine Expeditionary Force, noted that 'intelligence began to improve with information that came from JSTARS'.³⁴ Finally, General Merrill McPeak,

Air Force Chief of Staff, stated: 'Never again will we want to go to war without some kind of Joint STARS capability'.³⁵

Despite this vindication, only 8 years later operational planners neglected this once-prized capability. Joint STARS was eventually deployed to Kosovo as part of Operation Allied Force in 1999, but it was not included from the start of the campaign. Due to the rugged terrain, the dense foliage, the complicated situation on the ground, the commingling of Serb forces with civilian traffic, the paucity of available aircraft and issues over basing, the contribution of Joint STARS was initially limited.³⁶ However, it was eventually gainfully employed.

Fighter pilots came to recognise that the system "changes the rules" because its ability to detect, locate, and track vehicular movements reduced the need for an inefficient visual search... This allowed such assets to be more effective and efficient in finding, identifying, and targeting Serb forces.³⁷

GMTI information was once again used to ensure an economy of effort and a concentration of force during the initial stages of Operation Enduring Freedom in 2001 and Operation Iraqi Freedom in 2003. In Afghanistan, GMTI was used to cue other motion imagery assets onto suspected Taliban and al-Qaeda forces as they fled from the advancing Northern Alliance units. The GMTI information covered a large area and could apportion other motion imagery assets accordingly in order to monitor suspect tracks and identify whether it was hostile or civilian. This provided an efficient use of resources and a concentration of force when required. In Iraq, GMTI also enabled air power to be concentrated in both time and space against manoeuvring Iraqi ground forces.³⁸ In *The Age of Airpower*, Martin Van Creveld wrote:

Directed to their targets by means of satellite and JSTAR aircraft, using the most up-to-date equipment, the Coalition aircraft rained down air-to-ground missiles while also using their cannon for strafing.³⁹

More specifically, SKASaC collected 'pattern of life' MTI data in Iraq before 3 Commando Brigade's amphibious assault on the Al Faw peninsula.⁴⁰ This provided excellent situational awareness of the peninsula, including major routes, areas of heavy traffic and Iraqi force dispositions. MTI data continued to be provided to the Royal Marines during their advance in order to inform them of moving targets along the peninsula.⁴¹

Counterinsurgency operations in Iraq and Afghanistan have demonstrated the value of MOTINT outside of a traditional war fighting scenario. Motion imagery has been used extensively by ground forces to monitor activity at a designated compound, along routes with regular IED activity, of known insurgent bed-down locations, of the movements of known insurgents, and also in the role of over-watch of a patrol or convoy for force protection. In particular, it is well-known that motion imagery has repeatedly identified suspicious activity at the side of a road or other vulnerable points, which has indicated the 'digging-in' of an IED.⁴² In May 2012 motion

imagery identified and tracked a large number of insurgents preparing to conduct an ambush along Highway 1 in the vicinity of Gereshk.⁴³ Also in May 2012, a Reaper from 39 Squadron was tasked to assist ISAF forces manning a Check Point in Nad-E Ali that had come under fire from insurgents. Through motion imagery the Reaper crew observed the insurgents move from one firing position to another and engaged the insurgents when there was no risk to civilians or property.⁴⁴ Of course, there are many other examples.

The value of MTI has also been extensively documented. Coalition ground forces have benefited from the collection of 'pattern-of-life' (or Traffic Pattern Analysis) information. This has provided ground forces with improved situational awareness of their areas of operation. As an example, as part of Operation MOSHTARAK in 2010, 1 Royal Welsh commented that MTI information 'allowed them to manoeuvre into areas they knew they could best affect as part of their operational focus'.⁴⁵ MTI can also contribute to the counter-IED effort by identifying activity associated with the emplacement of IEDs; if a stretch of road is no longer being used by local nationals, this may indicate the presence of an IED along that stretch of road.⁴⁶ At the early stages of the IED cycle, wide area surveillance can also identify the facilitation networks and routes used to transport narcotics out of Afghanistan; as well as identify the movement of vehicles that might be facilitating weapons, IED components and devices into Afghanistan. During November 2010, GMTI information was provided to ISAF ground forces which facilitated the interdiction of suspicious tracks on the ground resulting in the seizure of nearly ten tonnes of narcotics, the identification and destruction of three narcotics laboratories, and the seizure of components and nearly one-tonne of explosives used in the manufacture of IEDs.⁴⁷ MTI information can also directly assist a convoy transiting a known area of insurgent activity by identifying tracks that intersect the proposed convoy route that may be indicative of IED emplacement or preparation.⁴⁸

The value of combining different MOTINT assets has also been demonstrated in recent operations; fusion of multiple sources allows analysts to conduct 'target development' or 'network analysis' of a subject area and the observation and recording of motion, can significantly enhance that network analysis. In many cases, the movement between areas of interest can provide an important level of detail that would otherwise be lost by analysis of the individual areas in isolation. In particular, focusing on MOTINT may aid the identification of a key node in a given network. This concept also has application in understanding the human terrain in a given area. MOTINT can assist analysts in their understanding of the relationship between population centres; those that have a greater level of motion between them may indicate amicable relations, perhaps due to tribal affiliation. Conversely, where there is no motion at all, this may indicate a rift or a different tribal affiliation. Similarly, movement between a population centre and a known enemy location may indicate collusion.

Operations in Libya in 2011 again proved the value of MOTINT. The vast open deserts of northern Libya were ideal for MTI platforms. The nature of the campaign, with the conventional forces loyal to Gaddafi on one side and the 'rebels' on the other side, meant that intelligence

was essential for situational awareness. Once air operations began in earnest, MOTINT was vital to achieve an effective targeting cycle and the cross-cueing of other platforms. This capability is demonstrated by the cross-cueing of an MQ-1 Predator and an RAF Tornado GR4 by a Sentinel R1 via an E-3D Sentry in the targeting of a Libyan tank. The tactical director of the AWACS described the engagement:

The target was first found by a Sentinel R1 Airborne Stand Off Radar (ASTOR) aircraft and we passed the target over to a US Air Force MQ-1 Predator unmanned aerial vehicle to identify it...We then talk to the fast jets to make sure the airspace is clear. When everything is ok to hit the target, then it is passed up to CAOC for the Commander to issue his directive.⁴⁹

Without wide-area MTI detecting the movements of Gaddafi's forces, the crews operating the Predator and Tornado would have been consigned to a significantly less-efficient and less-effective visual search. The provision of MOTINT was not just limited to the Sentinel. The Sea King Mk7 ASaC helicopters also contributed GMTI information to operations in Libya. Not only did they contribute MTI data to provide situational awareness in the maritime, littoral and coastal environment, they also directly supported British Army Air Corps' Apache attack helicopters operating from HMS Ocean.⁵⁰ MTI was used to identify ingress and egress routes for the Apaches in order to enable them to safely engage targets ashore.

This section has described the evolution of how military forces detect the movements of an adversary. It has demonstrated that technology has consistently provided new capabilities for the provision of MOTINT. From the scourage, to the balloon and then the aircraft, to the invention of radar, the use of radar on AWACS and other MTI platforms, and the ability to collect motion imagery, each capability has delivered an enhancement on its predecessor. These enhancements have provided two main advantages. First, they have provided a capability to detect motion over an increasingly wide area. The scourage was limited to observation at the range of his eyesight and then a pair of binoculars. It was also limited by the vantage point to which he could deploy. MTI platforms, however, such as Sentinel, Joint STARS and SKASaC, provide a capability that can track motion over hundreds of kilometres. The height and reach of air platforms is crucial in delivering this capability. Second, this improved situational awareness can subsequently reduce the 'mass' of other forces required in a given conflict. Situational awareness ensures improved efficiency, economy of effort and concentration of force of other platforms and forces. The cross cueing of an RPAS with a relatively smaller field of view from MTI data has proven itself to be extremely effective. Air MTI ensures that manned and unmanned aircraft are employed more efficiently. For ground forces, the Al-Khafji example from the 1991 Gulf War and even the earlier use of aircraft in the Italo-Turkish war in 1911-12 demonstrates that situational awareness can reduce the requirement for flank and rear protection. The interdiction of specific tracks over a large area in Afghanistan for counter-narcotics and counter-proliferation further demonstrates that MOTINT can facilitate an efficient and effective employment of resources.

The Future of Motion Intelligence

It appears that MOTINT has a bright future indeed. Many systems are currently being developed to provide a MOTINT capability. Improved sensors with greater fidelity and coverage are under development. Moreover, as has been the case throughout history, the platforms that carry a MOTINT sensor are also improving with greater levels of persistence. Thus, sensors that provide larger coverage and platforms with longer persistence are the main enablers for an improved MOTINT capability in the future.

With regards to persistence, there is the potential for RPAS to have an endurance measured in days and weeks instead of minutes and hours.⁵¹ The AeroVironment Global Observer is designed to remain airborne for seven days; Boeing is also producing a system called Phantom Eye which is touted to remain airborne for four days; and Lockheed Martin's High-Altitude Long-Endurance unmanned airship could potentially have an endurance of fifteen days.⁵² But the ultimate contribution to improved persistence and coverage is likely to come from space-based radars. The US is currently procuring a Space Radar system to provide a range of capabilities; these include geo-spatial intelligence products, synthetic aperture radar imagery, and, importantly for this article, a Surface Movement Target Indication (SMTI) and Open Ocean Surveillance (OOS) capability.⁵³ Also, to demonstrate the UK's commitment to such technology, the government launched a £21m investment into space radar technology in November 2011 to part-fund a project by a private company to produce a NovaSar-S satellite for the purposes of synthetic aperture radar imagery as well as MTI.⁵⁴

There continue to be further technological advances in motion imagery and MTI sensors. The contribution of motion imagery to recent operations in Iraq and Afghanistan has resulted in prolific expenditure on this area of Intelligence Surveillance and Reconnaissance (ISR). In both campaigns, motion imagery has provided the 'eyes' that General Pershing so eagerly wanted from his ailing "Jenny" in the Mexican Punitive Expedition in 1916.⁵⁵ The Multi-spectral Targeting System (MTS) employed on the MQ-1B Predator (MTS-A) and MQ-9 Reaper (MTS-B), which has a robust suite of infrared sensors, colour/monochrome daylight TV camera, image-intensified TV camera and laser designator, has proved immensely effective.⁵⁶ Future wide-area motion imagery capabilities, such as ARGUS-IS by BAE Systems, are billed to be able to image a 7.2km diameter area.⁵⁷ ARGUS-IS also has a remarkable capability in that it provides up to sixty-five independently steerable video windows with automatic tracking of a specific vehicle or dismount in any window without commands from the operator.⁵⁸

Technological advances also continue to improve the MTI collection capability. Next generation radars include Northrop Grumman's AN/ZPY-2 sensor on board the Block 40 Global Hawk. This radar has also been suggested for inclusion on the proposed Global Hawk-based Alliance Ground Surveillance (AGS) capability for NATO.⁵⁹ A successor to the Littoral Surveillance Radar System (LSRS) is also being developed by Raytheon under the Advanced Airborne Sensor (AAS) project to continue the US Navy's littoral MTI capability on the P-8A aircraft.⁶⁰ As an adjunct to the P-8A Multi-mission Maritime Aircraft (MMA) the US is also procuring a Broad Area

Maritime Surveillance (BAMS) Global Hawk variant fitted with an array of sensors including Maritime MTI.⁶¹ Once in service, the system will be able to provide long-range, wide-area and persistent coverage of the maritime environment. The utilisation of radar technology has its limitations when operating in areas of undulating terrain, dense vegetation, and high concentrations of urbanisation. However, technological innovations are also improving the ability to track motion even in areas of dense vegetation. The FOLIage penetrating REconnnaissance, Surveillance, Tracking and Engagement Radar (FORESTER) is reported to be able to track slow-moving, low-radar-cross section vehicles and dismounts under foliage.⁶² Moreover, FORESTER is said to be able to do so over an extremely wide area of 400km squared.⁶³

The potential benefits of increasing persistence and coverage are numerous. In a conflict scenario, they provide an improved ability to detect, track and attack targets on the move. Moreover, they would provide a level of forewarning of attack never before dreamed of. Where a country is suspected of developing weapons of mass destruction, MOTINT from satellites could monitor vehicular activity around suspect sites without the need for over flight and basing considerations. Persistent and wide-area coverage could also provide surveillance of long and troublesome borders for law enforcement purposes. MOTINT could also determine which roads are open and useable after a flood in disaster relief and humanitarian crises; it could also determine the level of a refugee crisis by identifying where refugees are currently heading and in what number. MOTINT also has an application in anti-piracy, such as off the coast of Somalia. With enough fidelity, MOTINT could also be used to monitor the after-effects of an earthquake and the potential size of a tsunami, especially in the Pacific. All of this, however, relies on improved persistence and coverage.

Conclusion

This article has articulated the concept of MOTINT and its relation to air power. It has explained what is meant by the term and offered a definition of what this category of intelligence entails. It has also rooted the concept into an historical framework in order to explain how and why modern military forces acquired the capability to detect motion. It has demonstrated the importance of air power in this regard by articulating the significance of height and reach in acquiring MOTINT. In doing so, it has emphasised the value of MOTINT in improving the efficiency, economy of effort and concentration of force in the deployment of other air, naval and land forces. Finally, it has also explained the future developments of MOTINT and how these developments are overwhelmingly reliant on air and space power.

This article argues that technological advances in the ability to detect and track motion have elevated it as a source of intelligence on a par with an image, a signal, and a human agent. It has unique characteristics unlike any of the current intelligence categories. Moreover, the data that a motion imagery or MTI sensor collects requires specific storage, exploitation and dissemination tools. Just as the advent of both imagery and signals intelligence resulted in national agencies capable of organising, collecting, analysing and disseminating IMINT and SIGINT, the importance of MOTINT may require further structural re-organisation in order to

process the many different facets of this type of intelligence. In a time of financial uncertainty and budgetary pressures these ponderings about an improved MOTINT capability may prove futile. But, as this article advocates a concept, it is primarily and at least initially being written to provoke discussion and debate. With an improved persistence, coverage and collection capability, it is likely that this type of intelligence will continue to be an important element to the way that modern military forces operate. Given its track record, it is almost inconceivable that a counterinsurgency or conventional military campaign could be conducted without a MOTINT capability. Moreover, the civil applications of such technology are numerous. Understanding the basic concept of MOTINT is an important first step.

Notes

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³ CAS Fellows introductory letter that referenced the forthcoming RAF Strategy 2012, dated 26 January 2012.

⁴ *Future Air and Space Operational Concept*, (London: MOD, 2009), part 2, p. 4, available at: <http://www.mod.uk/NR/rdonlyres/E0F9FD91-A354-4D31-87A7-2672B50B14B8/0/FASOC2009webversion.pdf>, accessed: 29 June 2012.

⁵ Lawrence Freedman, 'The Revolution in Strategic Affairs', *International Institute for Strategic Studies - Adelphi Paper 318*, (London: Oxford University Press, 1998), p.27.

⁶ According to the Motion Imagery Standard Board (MISB), a body directed by the National Geospatial-Intelligence Agency (NGA) as part of the Department of Defence (DoD) to oversee all aspects of Motion Imagery, available at: <http://www.gwg.nga.mil/misb/faq.html>, accessed: 7 June 2012.

⁷ Ibid.

⁸ Ibid.

⁹ 'Sensor Ships: Airborne Intelligence, Surveillance and Reconnaissance', *Jane's Defence Weekly*, 31 August 2011, p. 22.

¹⁰ Richard Dunn and Price Bingham and Charles Fowler, 2004, 'Ground Moving Target Indicator Radar: And the Transformation of US Warfighting', available at: <http://www.northropgrumman.com/analysis-center/paper/assets/Ground-Moving-Target-Indicator.pdf>, accessed: 11 June 2012, p. 7.

¹¹ 'Sensor Ships', p. 23.

¹² Joint Warfare Publication 2-00, Joint Operational Intelligence, 1A-4.

¹³ Ibid., 1A-4.

¹⁴ Ibid., 1A-4.

¹⁵ Brigadier Brian Parritt, *The Intelligencers: British Military Intelligence from the Middle Ages to 1929*, (Barnsley: Pen& Sword Books Limited, 2011), p. 9.

¹⁶ Parritt, *The Intelligencers*, p. 9.

¹⁷ Martin Van Creveld, *The Age of Airpower*, (US: Perseus Books Group, 2011), p. 6.

¹⁸ Ibid., p. 19.

¹⁹ AP3003, p. 12.

²⁰ Van Creveld, *The Age of Airpower*, p. 26.

²¹ Michael Sharpe, *The History of the Royal Air Force*, (Bath: Paragon Books, 1999), p. 10.

²² James S. Corum and Wray Johnson, *Airpower in Small Wars*, (University Press of Kansas, 2003), p. 16.

²³ Ibid., p. 26.

²⁴ Emmanuel Gustin, *British ASV Radars*, available at: http://uboat.net/allies/technical/uk_radars.html, accessed: 27 June 2012.

²⁵ Gustin, *ASV Radars*.

²⁶ Air-to-Surface Vessel Radar (ASV) Factsheet, available at: <http://www.iwm.org.uk/collections/item/object/30005843>, accessed: 6 Jun 2012.

²⁷ Ibid.

²⁸ Dunn, *GMTI*, p. 11.

²⁹ Ibid., p. 13.

³⁰ Ibid., p. 13.

³¹ Ibid., p. 13.

³² Ibid., p. 13.

³³ Ibid., p. 14.

³⁴ Ibid., p. 14.

³⁵ Ibid., p. 14.

³⁶ Ibid., pp. 14-15.

³⁷ Ibid., p. 15.

³⁸ Ibid., p. 17.

³⁹ Van Creveld, *The Age of Airpower*, p. 335.

⁴⁰ 'The "Baggers" – Royal Navy Sea King Mk 7 Airborne Surveillance and Control (SKASaC) helicopters', *RUSI Defence Systems*, Vol. 14, No. 3 (Spring 2012), p. 75.

⁴¹ Ibid., p. 75.

⁴² *RAF Operational Update*, 17 March 2012, available at: <http://www.raf.mod.uk/rafoperationalupdate/opsupdate/opsupdate17mar2012.cfm>, accessed: 13 June 2012.

⁴³ *RAF Operational Update*, 5 May 2012, available at: <http://www.raf.mod.uk/rafoperationalupdate/opsupdate/opsupdate05may2012.cfm>, accessed: 11 June 2012.

⁴⁴ *RAF Operational Update*, 12 May 2012, available at: <http://www.raf.mod.uk/rafoperationalupdate/opsupdate/opsupdate12may2012.cfm>, accessed: 11 June 2012.

⁴⁵ *Insight Magazine* (RAF Waddington), Issue 5, 2010, p. 33.

⁴⁶ 'Counter-Culture', *Jane's Defence Weekly*, 25 August 2010, p. 22.

⁴⁷ *RAF Operational Update*, 5 December 2010, available at: <http://www.raf.mod.uk/rafoperationalupdate/opsupdate/opsupdate05dec2010.cfm>, accessed: 11 June 2012.

⁴⁸ *Insight Magazine* (RAF Waddington), Issue 2, 2011, p. 16.

⁴⁹ 'AWACS provides key link for NATO strikes over Libya', *Jane's Defence Weekly*, 3 August 2011, p. 7.

⁵⁰ The "Baggers", p. 75.

⁵¹ 'Sensor Ships', pp. 24-27.

⁵² Ibid., pp. 25-26.

⁵³ 'Space Radar', available at: <http://www.losangeles.af.mil/library/factsheets/factsheet.asp?id=5308>, accessed: 13 June 2012.

⁵⁴ 'UK Space Radar Project Initiated', BBC News, 29 November 2011, available at: <http://www.bbc.co.uk/news/science-environment-15899186>, accessed: 13 June 2012.

⁵⁵ Corum, *Airpower in Small Wars*, p. 16.

⁵⁶ MQ-series Factsheets, available at: <http://www.af.mil/information/factsheets/factsheet.asp?fsID=6405>, accessed: 7 June 2012.

⁵⁷ Ibid., p. 22.

⁵⁸ ARGUS-IS Factsheet, available at: [http://www.darpa.mil/Our_Work/I2O/Programs/Autonomous_Real-time_Ground_Ubiquitous_Surveillance-Imaging_System_\(ARGUS-IS\).aspx](http://www.darpa.mil/Our_Work/I2O/Programs/Autonomous_Real-time_Ground_Ubiquitous_Surveillance-Imaging_System_(ARGUS-IS).aspx), accessed: 22 June 2012

⁵⁹ 'Sensor Ships', p. 23.

⁶⁰ Ibid., p. 23.

⁶¹ MQ-4C Triton BAMS Overview, available at: <http://www.as.northropgrumman.com/products/bams/index.html>, accessed: 11 June 2012.

⁶² 'Sensor Ships', p. 23.

⁶³ Ibid., p. 23.

Viewpoints

EBO – Fit for Purpose?

By Mr Paul Stoddart

Introduction

The effects-based operations (EBO)¹ concept has been extant for over 20 years yet remains controversial despite extensive use and considerable debate. This short paper aims to outline the main issues raised and to offer an opinion of its actual utility particularly in air power terms. One view is that EBO is an overly academic scheme which is impracticable in the real world. Another is that it is an effective, though intellectually demanding, method but one which has been often misunderstood and misused. In short, has EBO been tried and found wanting or tried and found difficult?

Some of the assessments and censure have been very harsh. For its 2006 campaign in southern Lebanon, the Israeli Defence Force (IDF) used its EBO variant, Systemic Operational Design (SOD). That doctrine and its application were severely criticised in the subsequent government inquiry.² The IDF undoubtedly had far greater combat power than its adversary and the Israeli Air Force (IAF) could hit targets with near impunity. However, the operational design was described as “incomprehensible” and it failed to achieve decisive results. SOD was judged to be inflexible and process-centric with the assessment of the Hezbollah adversary failing to take into account the human element of conflict. The result, the inquiry concluded, was an ineffective use of force leading to strategic failure. In summary, the critics claimed that SOD was unrealistic and so complex in practice as to be unfit for purpose.

In 2008, General James Mattis, the then Commander of US Joint Forces Command (USJFCOM), published an outspoken critique of EBO.³ A series of negative assessments led to his unequivocal directive:

"Effective immediately, USJFCOM will no longer use, sponsor or export the terms and concepts related to EBO...in our training, doctrine development and support of JPME (Joint Professional Military Education)."

General Mattis also attributed Israel's 2006 failure to *"over-reliance on EBO concepts"* and referred to EBO achieving *"...mediocre results in exercises, experiments and current operations"*.

A prompt defence stated that EBO was combat proven and had been the basis for success in the Operation Desert Storm air campaign (Kuwait, 1991) and in Operation Allied Force (Kosovo 1999).⁴ It is notable that the defenders were serving USAF officers. EBO originated in the Air domain and many advocates have been airmen; the Land domain has generally been less enthusiastic. Given the intellectual investment in EBO, it would be wrong to discard it without careful consideration but given the criticisms, thorough review is essential with revision or rejection as appropriate.

The core of the concept is simple and is, I believe, an entirely valid approach to operations. First, the aim is achieving the required end state efficiently and effectively; ie it is far more than organising military activity. Second, the effects of actions must be considered pan domain and long term. Third, thorough analysis of actions is essential so as to support campaign progress assessment. From the third point, task completion does not guarantee achievement of purpose; understanding the causal links between actions and outcomes is vital.

Unfortunately, while the concept is simple its application is not. Determining the aims and the effects required, identifying the best means of achieving them and then assessing the results actually achieved are all very demanding. (Dealing with the pan domain and long term effects issue can be particularly difficult). EBO was oversold by some of its advocates who promised too much and then under delivered. It was implied (or even claimed) that a highly detailed model of the adversary and scenario would readily identify courses of action and offer reliably predictable outcomes. In practice, no model could adequately represent such complex matters nor was the required data readily available if at all. The only guaranteed prediction was the eventual disillusionment of the 'customers'. They were understandably not impressed by claims that all would be well if only more data could be collected and a more complex model built. As a result, many rejected the concept and returned to their previous practices. Unfortunately, this has included the bad habit of using a capability because it is available rather than because it is appropriate. (There is some truth in the Land/Maritime joke that Air cannot see a bridge without wanting to drop it).

Others have paid lip service to EBO and misapplied its terms. In particular, 'effect' has become synonymous with 'activity'. This is absolutely not the case. They are related but distinct; an effect is the result of an activity. The phrase *'delivering effects'* is now common and it has definite negative effects itself. It implies that the selected activity is guaranteed to achieve the intended effect. Even when an activity is performed well, the intended effect may not occur,

eg the target may have been mis-selected. Furthermore, this view reinforces the tendency to under-resource assessment (why bother if the outcome is certain?). Yet, the basis of EBO is continual assessment so as to gain *and* maintain thorough understanding of the scenario, of the results achieved (good and bad) and, ultimately, of campaign progress. Unfortunately, even the immediate, local effects of actions are often inadequately understood let alone the wider system and longer term outcomes.

Properly applied, EBO can be both very effective and very efficient; though to achieve this, both the aim and the target must be well understood. In Operation Desert Storm, the initial plan to suppress the Iraqi air defences involved attacking each sector operations centre (SOC) with six 2,000-lb LGB. It was then realised that complete destruction was not essential, the requirement was to degrade effectiveness. Instead, each SOC was struck with a single 2,000-lb bomb aiming to damage the facilities and discourage the survivors. In the event, the Iraqi IADS collapsed within 4 hours and never functioned effectively again. The required effect was achieved at greatly reduced cost so freeing scarce assets for other missions.

The claim that Kosovo was an EBO success is only partly correct. Air power was eventually applied effectively though it was not the sole factor in forcing Milosevic to concede. The campaign began with a serious error, specifically failing to understand the importance of the province of Kosovo to Serbian national identity. It was assumed that a 'short, sharp' coercive lesson would be enough to end the ethnic cleansing and force Serbian forces to withdraw. The air campaign eventually lasted 78 days and generated considerable criticism as to the means and doubt as to its effectiveness. (Air attack effectiveness against Serbian fielded forces was greatly over-estimated). It was not until D+33 that attacks were made against the 'four pillars' of Milosevic's power: the political centre, the media, the security forces and the economic system. Extensive damage to the economic infrastructure plus water and power shortages provoked civil unrest. The eventual targeting of assets belonging to key regime members led to significant pressure on Milosevic to capitulate. Though Kosovo was far from a perfect campaign, it is a good 'bad' example of EBO in emphasising the importance of understanding your adversary, selecting the right targets and conducting accurate assessment.

A poorly devised and directed air campaign can be both very costly and ineffective. Operation Rolling Thunder directed massive attack effort (844,000 tons of munitions) against North Vietnam. Intended to coerce the North's leadership to cease supporting the Viet Cong insurgency in South Vietnam, it failed completely. Envisaged as lasting weeks or months, it ran for 3½ years (March 65 to November 68) with the loss of over 900 aircraft. By contrast, Operation Linebacker II lasted only 11 days and met with success. It inflicted such severe damage on North Vietnam's economy that it forced their leadership to return to the 1972 Paris peace talks and to sign a cease fire agreement. In Rolling Thunder, the Americans misjudged the North's determination to reunify the country and hence their readiness to absorb the punishment of an air bombardment that laboured under political limitations. In Linebacker II, air power was directed against particularly high value targets whose collective loss was

unacceptable to the North. The better understanding of the adversary's values was key to Linebacker II's success. (It is reasonable to analyse pre-EBO era conflicts such as the Vietnam War from an effects perspective. Technology changes, the principles of war do not).

Devising and executing an air tasking order is a major challenge requiring expert knowledge and much effort. It is the means by which air power is applied but the tactical and organisational skill must be complemented by campaign level understanding. Unfortunately, the emphasis is often far more on action and ISR collection than on analysis. Terabytes of data do not guarantee success. Situational awareness is vital but situational *understanding* is even more important. That requires assessment by people who understand both the scenario and the utility of air power at the campaign level. Yet, we are often still drowning in data while starving for knowledge. As one authority has observed:

"Sifting the data into what is important and time-critical becomes a genuine challenge, since concentrating on the wrong thing could lead to mission failure. The drive to streamline procedures and handle ever more data has had an important side-effect: airmen have become driven by process not strategy".⁵

EBO has been misused and, unsurprisingly, failed. But it has also worked and can work again if it is applied correctly and if the focus is that of achieving strategic aims with process as the supporting effort. A poorly executed attempt at the manoeuvrist approach does not invalidate that concept. Equally, an inept use of EBO should prompt criticism of the user not the method. The EBO evangelists oversold the concept and inevitably people were disillusioned. EBO is not simple; it is very demanding as it requires considerable intellectual investment and application. To be blunt, the intellectual challenge is off-putting to some people. However, a campaign is far more than the organising of tactical activities. Our undoubted tactical expertise must be complemented by campaign level capability.

One of general Mattis's criticisms was that *"EBO discounts the human dimensions of war (e.g. passion, imagination, willpower and unpredictability)"*. Applied sensibly, EBO takes account of the human dimension. There is a temptation to focus on tangible systems such as power grids which offer greater predictability than people and societies. Many military people and most analysts prefer the relative certainty of the quantitative domain such as weapon ballistics. We must complement this with a qualitative approach to campaign planning and assessment. It does not mean a New Age 'touchy feely' style but the development of a knowledge-based intuitive filter to see through the fog of war to recognise the truly important detail.

EBO has utility if it is properly understood and sensibly applied. That application must begin with the determining of the aims and only then should the means be considered. Of course, we must make war as we have to rather than as we would wish to, but we must stop taking actions simply because we have the means. Owning a hammer does not mean treating every problem as a nail. We must stop using the term *'delivering effects'*. It has a toxic effect

on people's understanding of the concept. It implies that achieving an effect depends solely on completing a particular task, so making assessment an option rather than the necessity it is – and one deserving greater resource than it often gets. Education is key. We must expand education beyond expertise in technology and tactics. We must understand the utility of air power at the operational and strategic levels. It means a solid foundation of knowledge of air power history, of when it worked and why it worked and when it failed and why it failed.

Notes

¹ In UK military doctrine, EBO is expressed as the effects-based approach (EBA) to operations, an element of the pan domain Comprehensive Approach. As much of the comment and criticism originates from the USA, the term EBO will be used in this paper for consistency.

² Matthews, M. M. 'We Were Caught Unprepared: The 2006 Hezbollah-Israeli War'. The Long War Series Occasional Paper 26. Fort Leavenworth, Kansas. Combat Studies Institute Press. 2008.

³ Mattis, James N. "USJFCOM Commander's Guidance for Effects-based Operations". *Parameters*, Vol. XXXVIII, Autumn 2008. pp. 18-25. <http://www.carlisle.army.mil/usawc/Parameters/Articles/08autumn/mattis.pdf>

⁴ Carpenter, P. M and Andrews W. F. 'Effects-based Operations: Combat Proven' Joint Force Quarterly Issue 52 (1st Quarter 2009).

⁵ Peach, S. 'The Airmen's Dilemma: To Command or Control?' Chap 6. pp123-4. Air Power 21. Challenges for the New Century. Edited by Peter W Gray. The Stationery Office. 2000.

Defence Research Paper Abstracts

To what extent should the regeneration of a wide-area maritime patrol capability be a priority for UK Defence and National Security?

Wing Commander S J Austin RAF

The cancellation of the Nimrod MRA4 maritime patrol aircraft (MPA) was one of the most controversial decisions of the 2010 Strategic Defence and Security Review, and has consequently led to widespread criticism regarding the resultant capability gaps in the UK's ability to ensure maritime security for the UK national interest. The Government maintains that the use of other assets is being maximised to cover the gaps, and that the risk is therefore 'tolerable.' This paper examines those capability gaps by assessing the importance of the maritime environment to the UK, the threats that the maritime environment presents, and the ability of the UK to mitigate those threats with current assets. By reviewing existing documentation and critically analysing evidence presented to the House of Commons Defence Committee, this paper will conclude that the Government's position is flawed; the UK national interest is vulnerable to maritime threats, both within UK waters and in areas of interest overseas, and the regeneration of a wide-area maritime patrol capability should be a high priority for UK Defence. This paper also examines the potential options for filling this gap, and concludes that for the foreseeable future, the only capability which can fill the current gap is a manned MPA.

http://www.airpowerstudies.co.uk/papers/Regeneration_of_UK_Wide-Area_Maritime_Patrol_Capability_Austin.pdf

Should the UK pursue a strategy of increased involvement in the training and mentoring of foreign air power? If so, how might the UK approach be improved?

Wing Commander D Beard RAF

Whilst the UK enjoys an enviable reputation for the quality of its training in the Air environment, it has never fully embraced the training and mentoring of foreign air forces as a tool for the application of strategic influence. This paper investigates the evolution of the UK approach and draws on the experience of the United States, identifying important lessons that might be applied to a future UK model. The paper also examines the synergies that can be realised between Defence and UK industry, concluding that the current financial climate necessitates a closer strategic dialogue between the two.

http://www.airpowerstudies.co.uk/papers/Training_and_Mentoring_Foreign_AirPower_Beard.pdf

The utility of air power in hybrid warfare; is UK Future Force 2020 air power correctly configured?

Wing Commander P A Cole RAF

Warfare is becoming more complex in character, possibly hybrid. This paper will examine the utility of air power in such warfare. To do this it will consider the spectrum of conflict the UK faces and whether hybrid warfare is new. It examines air power's employment in hybrid conflicts, analyses its strengths and weaknesses, identifies trends and considers if Future Force 2020 is correctly configured. The paper concludes that hybrid warfare is new, air power does have utility but is not a 'silver bullet', and that Future Force 2020 is as well configured for hybrid warfare as it can be due to a concurrent need to face conventional threats.

http://www.airpowerstudies.co.uk/papers/Utility_of_airpower_in_hybrid_warfare_Cole.pdf

No-fly zones – in the modern world, to what extent can they influence intent or capability within timescales that make the investment of resource viable?

Wing Commander N P Cook RAF

The no-fly zone has become a popular tool with which the international community has attempted to control belligerents. Despite this, little has been done to define them or understand their effect or costs. To understand whether they are actually effective tools, this paper looks at coercive theory and relates it to no-fly zones and their enforcement. Using information presented in academia, the media and United Nations resolutions and reports, it examines what exactly a no-fly zone operation is, whether it can have a coercive effect, and where both theory and practice need development. The main finding is that the no-fly zone operation is still not well understood or defined. Further, a lack of data and analysis has led to no clear idea as to the efficacy of no-fly zones. Finally, while methods can be developed to help guide decisions on whether or not to act from a resource allocation perspective, reality has proven this to be neither helpful nor relevant.

http://www.airpowerstudies.co.uk/papers/No-fly_zones_in_modern_world_Cook.pdf

Air Operations in the Urban Environment: an Analysis of the Challenges and Opportunities for Contemporary Air Power.

Wing Commander M J Farrell RAF

More people than ever before are living in towns and cities. As urban centres have become larger and more important, urban conflict has become more common. With this trend set to continue, this Paper identifies the contribution that air power can make to the urban campaign. Air power's core characteristics – height, reach and speed – provide a number

of key capabilities for the joint commander. By referring to recent examples and considering capability developments in the roles of C4ISR, kinetic attack and mobility and lift, this Paper finds that air power has much to offer. However, air capabilities cannot address the issues associated with urban conflict in isolation. The key is to integrate them into the wider joint, combined, multi-agency effort to maximise their utility in contributing to the overall aim.

http://www.airpowerstudies.co.uk/papers/AirOperations_in_the_Urban_Environment_Farrell.pdf

What skill-sets will be required of airmen/airwomen in the contemporary operating environment out to 2020/2030?

Wing Commander M D Leeming RAF

This paper is a research-led examination of the skill-sets required of those members of the RAF serving today. It sets out to compare and contrast those existing skills and values against the likely skill-sets which will be required in the contemporary operating environment out to 2020/2030. In doing so it examines the Core Values and Standards of the RAF and through the lens of generational theory and by using the Future Character of Conflict as the basis to theorise about the future operating environment, it concludes that there are a number of enduring skill-sets which the RAF will always require. The paper also concludes that in addition to needing to possess these enduring skills, the future Airmen and Airwomen will nevertheless possess new skill-sets, which the RAF will need to embrace and develop if it is to continue to attract and retain the very best talent.

http://www.airpowerstudies.co.uk/papers/Required_skill-sets_in_the_contemporary_operating_environment_Leeming.pdf

Airpower over Libya: coercion's finest hour?

Squadron Leader M S Tillyard RAF

This paper considers the use of air power for coercion. It examines the development of airpower doctrine, and shows how the ideas of military thinkers from before the dawn of flight have been applied to aircraft. Theorists have suggested that the key elements for effective coercion are understanding, communication, credibility and capability, and these are used to review four historic campaigns.

The four elements are next used to examine the UK's part in the 2011 NATO air campaign over Libya. This paper concludes that NATO attempted to undertake a coercive air campaign, to compel the Qaddafi regime through denial attacks on its fielded forces, and decapitation of its Command and Control capability. However, the coalition was unable to compel the regime into halting its attacks on the civilian population before it was militarily defeated by

opposition forces. This paper also posits that an early lack of understanding hindered the campaign's development.

This paper finally examines whether, in light of the reviewed campaigns, states are likely to continue to use air power as a tool of coercion. Although the SDSR has reduced the UK's military capability to understand future adversaries, and it has a gap in its ability to communicate with them, this paper concludes that the Government will continue to consider airpower as its first tool of military coercion. Air power will be applied alongside diplomatic and economic levers of power, but will be selected as the military option in advance of conventional land and maritime power.

http://www.airpowerstudies.co.uk/papers/Airpower_over_Libya_Tillyard.pdf

The battles of Dien Bien Phu and Khe Sanh: An analysis of the influence of air power.

Wing Commander J M Whitworth RAF

Current British Army doctrine states that the most important interface with the land environment is that with the Air, highlighting the criticality of airpower to success in most ground operations. This paper uses two case-studies from separate conflicts in Vietnam, the battles for Dien Bien Phu and Khe Sanh, to consider the influence of air power on two outwardly similar confrontations, which had very different conclusions. Given the similarities between Khe Sanh and Dien Bien Phu this paper will use the four fundamental roles of air power as a framework to analyse the two battles and assess their importance on their final outcomes. Through the analysis the paper will conclude that at Dien Bien Phu the French were defeated because they lacked sufficient air power to sustain and support the garrison, having effectively lost control of the air. In contrast, at Khe Sanh, the Americans were able to deploy their overwhelming air power capabilities to maximum effect; maintaining a credible logistical lifeline throughout and using their devastating air-attack capabilities to neutralise any North Vietnamese ground threats.

http://www.airpowerstudies.co.uk/papers/Influence_of_airpower_at_DienBienPhu_and_KheSanh_Whitworth.pdf

Book Reviews

The Capture of Louisbourg 1758

By Hugh Boscawen

Reviewed by Air Commodore Neville Parton

Introduction

It has to be admitted that the book which forms the subject of this review is not the standard fare for Air Power Review – with no obvious links to air power or current events – and yet it is this reviewer's contention that it has much to offer anyone with an interest in joint operations, strategy, history – and how to learn lessons.

In terms of the story itself, the author is uniquely qualified to write on this subject, having not only a 32-year career as a soldier within the British Army with a strong background in both operations and doctrine, but also a good understanding of the maritime environment gained from many years as an offshore yachtsman. He is also a direct descendant of the admiral who commanded the operation, and his personal interest in the subject, captured in over three decades of research, is evident in the care that has been taken to not only capture all the facts, but to weave these together to tell a story, complete with all the very human elements that form such a key aspect of any military operation.

The book itself covers the 1758 campaign by British forces to capture the French fortified settlement of Louisbourg, in what is now Nova Scotia, which turned out to be a significant act in the Seven-Years War. This was a ground-breaking and hugely successful joint amphibious operation, particularly when set against a less-than-prepossessing British record in this area

at the time. It covers not only the action in the campaign itself, but looks at the way in which the armed forces engaged on both sides were raised and maintained, and where they and this particular engagement fitted within the overall strategy of the British and French war ministers. Also, the longer-term implications are considered, for as is eloquently pointed out: "The experience gained during this campaign shaped Britain's amphibious capability, which Pitt [William Pitt, Britain's War Minister] used subsequently to construct a trading empire."¹

Particular elements that immediately evoke interest include the speed with which the Secret Committee of the Privy Council was able to develop a campaign plan, refit a fleet, and embark two regiments and their stores (ten weeks!), the use of a joint staff to develop a system for organising, commanding and controlling an amphibious assault, the carrying out of practical exercises to enable tactics and techniques to be perfected, and the difference that a truly joint staff can make to a campaign – both for good and ill.² However, the personal element is not overlooked, and there are some inspiring tales of key individuals at all rank levels, ranging from the three junior Officers whose initiative brought success in the initial assault, through individual acts of bravery by ordinary soldiers, to the senior Officers whose combined leadership brought overall success – in particular Admiral Edward Boscawen and Major General Jeffery Amherst.³

In a well-reasoned concluding section, the importance of a clear overarching strategy is brought out, along with the importance of choosing not only competent and experienced Commanders, but those who can work well with others. The importance of training at all levels, the use of a joint staff with top-down direction, and the need to balance operational imperatives with the ever-present demands of logistics are also identified. It is interesting to see the names of certain individuals appearing in the operations who would subsequently go on to greater achievements: Brigadier James Wolfe (of Quebec fame) and Master James Cooke being immediately apparent as a cut above their contemporaries. A final note points out that the capture of Louisbourg could be seen as marking a crossover in the history of the British Empire – whilst Boscawen and Amherst's success may have laid the foundations for Britain's trading empire, it also represented the last high point in the American colonies – which within 20 years would be fighting against Britain for their independence.

It should be noted that the work is copiously referenced, and has a fulsome set of appendices which include a guide to Louisbourg today, a full listing of the French and British orders of battle, and a 'where are they now' guide to the ships and regiments involved in the campaign. It also has a full glossary to assist those who may not be so familiar with the terminology involved in 18th century warfighting, as well as a wide range of maps and tables to assist in understanding the actual campaign itself, and a number of illustrations depicting the key individuals and locations.

Attractively produced and priced, whilst this is in every sense of the word a scholarly piece of work, it is also eminently readable, and provides not only an understanding of the campaign

of 1758 but also where that campaign fitted within the wider picture of the British and French operations in the Seven-Years War. It delivers some great insights into the problems of joint campaigning, and thereby not only reveals how our ancestors faced many of the same problems that we do today, but also points to some very relevant lessons that can be drawn from their experiences. Equally importantly, it is thoroughly absorbing, well balanced, and beautifully written – it comes heartily recommended as a truly great read.

Notes

¹ Hugh Boscawen, *The Siege of Louisbourg 1758*, Campaigns and Commanders (Norman: University of Oklahoma Press, 2011), p xv.

² See *ibid.*, pp 77, 130, 33 and 228. For instance the British commanders initially discovered that they could land 2,957 men simultaneously, and form them up within 7 minutes of landing, but within three days they procured additional craft and a further exercise allowed them to put nearly 6,000 men ashore with their commanders in the same timescale.

³ In the first case, Lieutenant Christopher Atkins RN, who landed Lieutenants Thomas Brown and Joseph Hopkins, and Ensign Alexander Grant, who with 40 men secured a landing site. With regard to the ordinary rank and file, when a mortar bomb landed in front of one of the British trenches, a Corporal Donald McPherson ran forward to it, twisted out the blazing fuze and held it over his head so that the French gunners could see what he had done. *Ibid.*, p 259. *ibid.*, pp 166 and 259.

Book Reviews

Dam Busters: The Race To Smash The Dams 1943

By James Holland

Reviewed by Group Captain (Retd) Ian Shields

Introduction

Those fans of James Holland's histories (including his very well-received *Italy's Sorrow* and *The Battle of Britain*) will welcome this latest book that traces from early inception through execution and into the aftermath what is undoubtedly the most famous (and therefore mythologised) single air raid of the Second World War. Given its place in the popular imagination of both that War and of the history of military aviation, it is surprising that more books have not been written on the raid, but as James Holland highlights, there have been remarkably few. Although he does not make such a claim, this book appears to set out to be the definitive history of the raid; given that time has allowed both a more balanced view of the history of the Second World War and access to previously classified material (both denied to Paul Brickhill, author of the best-known, until now, 1951 account *The Dambusters*) to what extent does he succeed?

Those familiar with James Holland's approach will recognise his style in this 400+ page volume. He adopts a very narrative approach, supported by excellent research with a wealth of details and considerable evidence of many hours spent delving into primary-source material. He also includes a great deal of the human story, dwelling, understandably on Gibson, but as a man with all his strengths and weaknesses. He is critical, but in a fair, balanced and justified way, of many of the senior figures, including Portal and Harris, and uses

these insights into the key players to make this a living, and frankly fairly easy to read, story. For this is the main criticism of the work: it is very much aimed at the popular history market rather than the more serious study of military history or of air power. And it is James Holland's informal style, concentrating as much on characters (and therefore his interpretation - albeit well-supported by facts - of these characters) that may put some readers off. But if you get beyond the seemingly banal the history is sound.

Two surprising things came out for me from reading this book. The first is how accurate in many ways the 1955 black and white, Richard Todd epic film was, given the restrictions of secrecy at the time. And the second is how very short the timeline was from inception to execution in 1943: the sub-title of "The Race to Smash the Dams" is exactly right. The book captures this race against time, as well as some of the spirit of the age, very well, and rightly highlights both the engineering triumph that the raids represented, and the human costs of Operation CHASTISE. Nor does James Holland flinch from highlighting the limitations of the raid, primarily by poor target selection, and the dispute between the RAF and the RN over first-use of the weapon. He perhaps slightly downplays the impact on both morale at home and on the Anglo-American relationship, but that is perhaps more a matter of personal judgement. More annoying was the number of typographical errors: in a book that has a full-price ticket of £20 this was poor.

Has, then, James Holland written the definitive book of the raid? In many ways yes: his grand narrative covers all sides and all angles, and his research is impressive. I remain slightly cautious about his populist and human-angle approach, but then this book is aimed at the wider reader. It is certainly a very easy read, and deserves consideration for a place on the bookshelves of all air power students.

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