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BAE Systems (British military defence contractor), and the UK Ministry of Defence are working on the Taranis. The name Taranis is named after the Celtic God of Thunder. It is designed for both precision strikes inside enemy territory and intercontinental strikes and has recently completed successful flight trials.

Avionics specialists with the 12th Aircraft Maintenance Unit prepare a Global Hawk for a runway taxi test at Beale Air Force Base, California. The program is a total force effort with the USAF Reserve's 13th Reconnaissance Squadron assisting active duty personnel.

A Royal Air Force MQ-9 Reaper UAV (Unmanned Aerial Vehicle) from 39 Squadron.

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A Black Hornet Nano Unmanned Air Vehicle (UAV) used by the British Army measures around 4 inches by 1 inch (10cm x 2.5cm) and provides troops on the ground with vital situational awareness. It is equipped with a tiny camera which gives troops reliable full-motion video and still images.

A line of Gloster Meteor F.Is and IIIs of 616 Squadron is refuelled at Manston, Kent, on 4 January 1945.

Foreword

By Wing Commander Fin Monahan

Our Autumn/Winter edition of Air Power Review focuses on the theme of Unmanned Air Systems (UAS). Debate and controversy of this now ubiquitous technology starts with its very name and what to call it. The terms Drone, Unmanned Air Vehicle (UAV), Remotely Piloted Air System (RPAS) and 'Killer Robot' have all been used, apparently interchangeably, to describe those unmanned systems that have been operated by the US and UK over Iraq, Afghanistan, Pakistan and the Horn of Africa over the last decade. Further clouding the understanding of the true nature of these platforms is the all too often ill-informed, popular media commentary on Unmanned Air Systems that shapes the public and political discussion. For the purpose of this Foreword, we have chosen to use the term Unmanned Air Systems (UAS) in order to encompass both remotely piloted and autonomous platforms.

With 3 articles on UAS the Editorial Board was conscious of the need to present differing perspectives on this contentious subject area which I hope you find both thought provoking and relevant to the current debate. This edition gets underway with Wing Commander Damian Killeen, Officer-in-Command of XIII Squadron (an RAF Reaper Squadron), co-authoring an article with Dr David Jordan from the Defence Studies Department at King's College London. The focus of their paper centres on rolling back some of the assumptions and misconceptions that have stuck in recent times, in order to contribute some clarity and facts to the discussion. In particular, the authors are clear that language and terminology are key to seizing the vital ground in the debate. Set alongside transparency and engagement from current operators, the authors suggest that sharing the same lexicon as the public and media would help to allay misplaced fears and suspicions around this aspect of air power. Killeen and Jordan also look to rebut the argument that UAS operators are somehow emotionally detached participants in the modern battle and that the use of lethal force from afar is somehow more likely, less moral – and by implication less legal – than dropping a bomb from 50,000 feet, using a manned aircraft in the theatre of operations, or by delivering a cruise missile from a range of 1500 miles.

Developing this final theme, Dr Peter Lee examines the Ethics of Remote Warfare in the 21st Century. In his article, Dr Lee examines how the advent of UAS delivering kinetic air power has resulted in 'new dimensions' in the political, ethical, legal and operational considerations of war. The author offers the convincing insight that the introduction of Reaper into the UK military's inventory has prompted political controversy and debate, the like of which was previously reserved for the discussion of the nuclear deterrent.

The Final UAS article is written by Wing Commander Guy Edwards from UK Defence's Development, Concepts and Doctrine Centre (DCDC). The author takes a look at the future

nature of UAS and introduces the concept of true autonomy, whereby highly automated systems may become a common feature of the air battlespace of tomorrow. Set against the backdrop of popular misunderstanding, moral and ethical reservations – and questions of legality described above – Guy Edwards contends that no single polemic presented to date is convincing. Autonomous, robotic technology he contends, may offer many advantages at levels of risk that are entirely acceptable. Not to embrace this technology presents a different type of risk – the risk of strategic disadvantage, technological marginalisation and the relinquishment of the nation's air power edge. The author echoes Wing Commander Killeen's and Dr David Jordan's argument that failure to engage on the subject – by government and the military – will permit others to lead the debate and set the narrative. The reader is left with the feeling that there is a certain inevitability to the development and use of automated systems now the cat has been let out of the bag, and, just as military use of the air evolved exponentially in the early part of the 20th Century, so will that of autonomous military UAS.

Leaving behind the UAS debate, our final article is written by Air Commodore Al Byford and examines the air power lessons of France's intervention in Mali – also known as Operation SERVAL. This fascinating article examines the move away from the enduring operations that many NATO countries have undertaken since the start of this century and looks at the return to contingency. Building on his previous viewpoint in our Summer 2013 edition (Volume 16, Number 2), the author analyses how the French swapped mass for agility and tempo in a bid to thwart the Islamic extremist insurgency in Mali last year. Byford argues that the political and public reluctance to commit ground troops to 'conflicts of choice' gives air power an opportunity to re-claim the 'preferred political tool' mantle that has been the Army's over the past decade of counter-insurgency in Iraq and Afghanistan. The consequences for UK Defence are set out with clarity in what is a compelling paper.

Our Viewpoints for this edition are written by CAS Fellow, Group Captain Clive Blount and Colonel Francesco Agresti of the Italian Air Force. Widening this publication's strategic gaze, Group Captain Blount examines the democratisation of the states of the Former Yugoslavia and the difficult path towards peace and stability that they have followed since the Balkan wars of the 1990s. The author provides a valuable insight into the role of external agencies in the democratisation process – for better and for worse – and how they have helped to shape the region. Colonel Agresti then addresses the debate on air power's utility as an independent, strategic arm. Discussing the role of air power in a supporting role in Iraq and Afghanistan, the author points to the decade prior to these conflicts, when air power was utilised independently as a strategic, coercive arm. It is concluded, however, that air power should form part of a more holistic approach to strategy and warfare, that, in the future, may see it routinely take a leading role.

Our Autumn/Winter edition concludes with 2 book reviews. Thomas Rid's *Cyber War Will Not Take Place* (C Hurst & Co, London, 2013) is reviewed by Squadron Leader Paul Withers before Flight Lieutenant James Brooks reviews William Waterton's auto-biographical account as a post war, jet test pilot, *The Quick and the Dead* (Grub, London, 2012).

Director Defence Studies (RAF)

Wing Commander JF Monahan OBE DFC MA MSc RAF

Wing Commander Monahan joined the Royal Air Force as a cadet pilot at East Lowlands Universities Air Squadron in Edinburgh whilst studying for a degree in French and Business Studies at the University of Stirling. He was commissioned in 1992 at the Royal Air Force College, Cranwell and completed flying training on the Tucano and Hawk aircraft. In 1993 he attended the University of Nottingham to study for a Masters in International Relations.

In 1996 he was posted to the Harrier Operational Conversion Unit before joining IV (Army Co-operation) Squadron at Royal Air Force Laarbruch in Germany. During his first operational tour he flew on operations over Bosnia and Kosovo.

In 2000 he was posted to Royal Air Force Valley, North Wales, to become a Qualified Flying Instructor on the Hawk aircraft. He was then posted to Royal New Zealand Air Force Ohakea as an exchange officer where he flew the A4K Skyhawk aircraft and held the positions of Training Officer and Executive Officer on 75 Squadron RNZAF.

In 2003 he took up a post as an instructor at the Tactical Leadership Programme in Florennes, Belgium. In that post he was the Deputy Air-to-Ground Shop Leader and specialised in Close Air Support, Combat Survival and Rescue and Tactical Support to Maritime Operations. He was then posted to No 1 (Fighter) Squadron in 2005 as Executive Officer. He completed tours of Afghanistan in 2005, 2006 and 2007 flying in support of coalition forces and was awarded the DFC for an action on operations in 2006.

In 2007 he took command of Cambridge University Air Squadron training university cadets on the Grob Tutor aircraft. On promotion to wing commander he was posted as Chief of Staff, Joint Air Maritime Organisation at Air Command, Royal Air Force High Wycombe. From 2009 until 2011, he completed his Advanced Command and Staff Course and gained an MSc in Defence Studies at the Defence Services Staff College, Wellington, India. He was then appointed Officer Commanding Operations Wing at Royal Air Force Leeming, a tour which saw him lead 135 Expeditionary Air Wing during the training and standby period for NATO Response Force 2013 duties. He also deployed as the Sentinel DOB Cdr to Dakar during Operation Newcombe in 2013. Wing Commander Monahan is currently Deputy Director Defence Studies (RAF) and is undertaking a PhD examining the organisational culture of the RAF.

Wing Commander Monahan is married to Jane and has three children. He enjoys skiing, cycling, mountaineering, sailing, travel and military history.

Notes on Contributors

Wing Commander Damian Killeen entered the RAF in 1991. After joining the Harrier Force in 1997, he became carrier qualified and spent 18 months as a frontline Qualified Weapons Instructor (QWI). Missions on Operation ALLIED FORCE over Yugoslavia in 1999 were followed by 3 tours in Afghanistan as IV (AC) Squadron Executive Officer. After a staff tour as the Harrier subject matter expert with 92 Tactics and Training Squadron at the Air Warfare Centre in 2008, he subsequently converted to Reaper in 2010, joining 39 Squadron at Creech AFB. A period of continued support to operations in Afghanistan was rewarded with promotion to Wing Commander in 2012 and completion of the Advanced Command and Staff Course and MA in Defence Studies. He returned to the Reaper Force in August 2013 as Officer Commanding XIII Squadron at RAF Waddington.

Dr David Jordan read for his first degree in Modern History at St Edmund Hall, University of Oxford, before moving to the University of Birmingham where he completed a PhD which examined air-land cooperation during the First World War. Following his PhD, he lectured in the School of History at the University of Birmingham from 1997-2000, and joined the Defence Studies Department at the Staff College (then at Bracknell) in 2000. He is one of DSD's air power subject matter experts, and was academic director for the air power aspects of ACSC between 2001 and 2013. He chaired the departmental examination board between 2001 and 2007, followed by a five year stint as Director of Teaching. He is a co-director of the RAF Centre for Air Power Studies, member of the Chief of the Air Staff's Air Power workshop and serves on the editorial board for *RAF Air Power Review*. His most recent book is the co-authored *Understanding Modern Warfare* (Cambridge University Press), and he has contributed to a variety of learned journals, including *US Naval War College Review, Small Wars and Insurgencies* and *Contemporary Security Policy*.

Dr Peter Lee is a Portsmouth University Principal Lecturer in Military and Leadership Ethics based at Royal Air Force College Cranwell, where he specialises in the politics and ethics of war and military intervention, the ethics and ethos of remotely piloted aircraft operations, and the politics and ethics of identity. In November 2012 Dr Lee transferred from King's College London after four years in the Air Power Studies Division and continues to lecture across a range of diverse subjects, from international relations to terrorism and insurgency. In 2012, he published *Blair's Just War: Iraq and the Illusion of Morality*.

Wing Commander Guy Edwards is an RAF navigator currently serving as a senior air power analyst and doctrine writer at the UK Development, Concepts and Doctrine Centre. His strong interest in military ethics, unmanned systems and future trends in air power has led to his involvement in a number of academic studies as well as work with the NATO Multinational Capability Development Campaign focussed on operational access, where he is a member of

the autonomous systems working group. A graduate and former member of directing staff of the Advanced Command and Staff Course, he still regularly presents on air and space doctrine and future air power trends.

Air Commodore Al Byford after joining the RAF on a cadetship at Cambridge University, flew over 4,000 hours as a Tornado strike, attack and reconnaissance pilot in a flying career that began with the first Gulf War and has included command of No.31 Squadron and No. 904 Expeditionary Air Wing in Afghanistan. His staff appointments have included operational requirements, Ministry of Defence policy and a spell as Tornado fleet manager. As Director of Defence Studies, he authored *AP 3000: British Air and Space Doctrine* and in his last appointment (at the Development, Concepts and Doctrine Centre) he wrote its successor, *JDP 0-30: UK Air and Space Doctrine*. Air Commodore Byford has taken post-graduate degrees at Kings College London and at Cambridge under the Chief of the Air Staff's Fellowship Scheme. A graduate of both the Higher Command and Staff Course and the Royal College of Defence Studies, Air Commodore Byford is currently Assistant Commandant (Air) at the Joint Services Command and Staff College.

RPAS: Future Force or Force Multiplier? An Analysis of Manned/Unmanned Platforms and Force Balancing

By Wing Commander Damian Killeen & Dr David Jordan

The focus of this paper centres on rolling back some of the assumptions and misconceptions surrounding Remotely Piloted Air Systems (RPAS) - or Unmanned Air Systems (UAS) as they have most recently been labelled. Debate – both in the media and the political arena – has been poorly informed, and there is a clear requirement to contribute some clarity and facts to the discussion. In particular, language and terminology are key to seizing the vital ground in a discussion that is littered with often wild assumptions. Set alongside transparency and engagement from current operators, the authors suggest that sharing the same lexicon as the public and media would help to allay misplaced fears and suspicions around this recently constructed pillar of air power. In examining the concepts of terminology, platform definition, operator situational awareness, operator detachment and legality, the paper attempts to dispel the myths and extraneous arguments put forward by the uninformed in order to provide some balance to the narrative.

Introduction

Remotely Piloted Air Systems (RPAS) have captured the imagination. An often emotive series of related narratives underpins a discourse on 'Drone Wars', accompanied by widespread speculation.[1] These narratives frequently conflate key issues, giving rise to some media myths which have done little to inform debate upon a technological development which has assumed increasing significance, and which sometimes obscures wider debates about the use of force. Media coverage is often negative in tone as a result.[2] These conflations and misapprehensions include an apparent inability to make clear distinctions between an armed, unmanned air system with full autonomy - the 'killer robot' – and the RPAS with clear human involvement in all aspects of the system's operation, particularly in the release of weapons from armed platforms. The controversial nature of RPAS use in operations since 2001 often conflates systems capability with political direction and introduces serious questions of legality and legitimacy, giving a sometimes sinister air to media coverage of the use of RPAS in lieu of manned platforms or the deployment of combat troops which conflates the RPAS – or 'drone' in current media-speak – and the decision-making process rather than viewing the RPAS as the tool employed to achieve a desired outcome. Media speculation is particularly intense given the involvement of the Central Intelligence Agency (CIA) in the operation of RPAS in the on-going 'war on terror', particularly the use of these systems against key targets – invariably people rather than infrastructure or equipment – in Yemen and Pakistan. This is accompanied by considerable academic inquiry into such operations, found in journals covering everything from military ethics to international relations.[3]

Equally, the nature of the RPAS itself has given rise to an array of speculative comment, suggesting that 'drone warfare' is little more than a dehumanised video game, barely distinguishable from popular gaming titles such as *Call of Duty*, and/or that the nature of the RPAS is such that they can – and in due course probably will – be flown by stereotypical 'geeks' who in no way conform to traditional images of aircrew, either in terms of ethos or physical capabilities. This viewpoint extends to speculation that the nature of air forces will forever be changed as manned platforms are superseded for combat and reconnaissance roles by remotely operated or robotic systems. This foresees the 'death of the fighter pilot' (shorthand for the demise of aircrew in all but the air mobility role) as force structures change to a front line made up overwhelmingly of unmanned platforms.[4] This is not, though, to reject the view of David Hastings Dunn that:

> [Drones]…constitute a 'disruptive technology' – that is, 'an innovative technology that triggers sudden and unexpected effects' and represents the potential for discontinuity from what went before'… both in their use by the United States, Israel and the UK, and in their potential as terrorist weapons, drones and their proliferation represent a new development in aerial warfare the implications of which have not yet been fully grasped, debated or responded to.[5]

Rather than dispute Dunn's contention that the RPAS represents a change in the way in which air warfare is conducted (as opposed to 'traditionalist views' arguing that 'drones' are simply an incremental development of manned platforms), this article seeks to contribute to the wider debate by deconstructing some of the conflated narratives in a bid to illustrate that this has introduced confusion or error to what is an important debate over the employment of RPAS – as distinct from autonomous robotic systems – and the way in which these platforms will influence force structures in the near-to medium-term.

The article does not seek to serve as an apologia for RPAS, the manner in which they have been used or to downplay their significance to either air power or warfare in general, but aims to highlight and clarify some critical issues which need to be properly and accurately understood to enable meaningful, properly-informed debate and the concomitant decision-making that must follow.

We contend that although RPAS have the potential to bring about significant changes to air warfare, the spectre of an inexorable 'rise of the machines' with remotely piloted and autonomous air systems dominating future force structures is unlikely, at least for the foreseeable future. Instead, RPAS will serve as an adaptable force multiplier with inbuilt flexibility through an open architecture systems vision rather than a platform-centric capability focus. In this construct, manned aircraft will remain a critical and predominant capability for major air forces, albeit as a smaller proportion of the manned-unmanned force balance.

While technological progression will undoubtedly influence the composition of the future UK military inventory, the pace and extent of a transition from manned to unmanned air vehicles is neither determined nor inevitable. Once societal perception becomes cognisant of the associated technology, most developments come to be readily accepted amongst the history of military evolution; lethal robots are a different matter.

In this context, it is essential to define some of the emotive coverage of this topic. This work suggests that the on-going opposition amongst air power practitioners to using the word 'drone', while well-founded, may, in fact, be an obstacle to informing the wider debate, and goes on to analyse the narratives on situational awareness, emotional detachment and 'Drone Wars,' before discussing whether RPAS are a future force construct for British Defence, or whether they form a multiplying element within a broader structure. It should be noted that the analysis considers capabilities and roles traditionally associated with larger air power platforms and which larger 'drones' now carry out; the plethora of smaller, man-portable or patrol mounted remote systems inundating the modern battlespace are not examined in detail, although this is not to deny that they may, in the future, become associated with a number of the issues raised. Also, the array of literature on the legal, ethical and political aspects of employing RPAS means that the article does not seek to add to this exceptional corpus of material, although it does inevitably consider these elements in a number of places.

The Importance of Definition

Is it an Unmanned Air Vehicle (UAV), an RPAS, a drone, or a robot? Should we care? At first sight, it may appear that indulging in a discussion of terms is little more than a means of delighting those interested in semantics or serves as a mechanism to confuse outsiders attempting to comprehend the nuances within the ongoing debate over what unmanned aerial platforms are and how they are used. Upon closer study, though, it becomes clear that a grasp of the common terms and the distinctions between them matters if the lively discussion over the place of unmanned systems in conflict is to be an informed one.

Those engaging with the debate over remotely piloted systems need to be comfortable with the distinctions, and semantics of language are essential to avoid misinterpretation and allow a mature, informed debate. It is arguable that, at present, much of the discussion in the public domain is based upon misperception and intuition. It seems that there may be a parallel with Noble Frankland's observation about the strategic bombing offensive against Germany, where 'people have preferred to feel rather than to know' about the subject, with concomitant misinterpretations of the reality.[6]

In laying out our definitions, it is important to address the confusion that sees UAVs and RPAS being considered as synonyms. In fact, they are not the same thing. A UAV may be defined as a flying machine that does not contain a human being. It is distinct from a guided weapon, such as a laser-guided bomb or cruise missile because, it is not a single-use warhead delivery vehicle. A UAV may be remotely piloted or it could be autonomous (a term which is itself fraught with misunderstandings).

An RPAS comprises many elements, including the UAV, the Ground Control Station (GCS), the remote communications links, and the aircrew. Using the Reaper as an example, the MQ-9 aircraft is the UAV, but requires crew in the GCS to control it. The whole package, which requires all three elements - the UAV, GCS and crew – to be present for the UAV to be able to operate is the RPAS.

This lexical confusion, coupled with historical baggage over the initial purpose of the unmanned aircraft has led to widespread use of the term 'drone'. The original 'drone' did just that – it droned around overhead, an unmanned aerial target for gunnery practice. The drone might survive its sortie and be reused, or it might succumb to the fire directed at it. This form of drone has not gone away. In addition to the traditional small aircraft flown remotely and designed to be shot down, the United States has been the most obvious in its conversion of numerous retired combat aircraft into drones, which can be employed for weapons testing, often surviving numerous flights. To illustrate how confusing the terminology has become, these drones – for instance the QF-4 and QF-16 – are controlled from ground stations by a crew and could legitimately be described as RPAS, since the components involved in an unmanned sortie by a QF-16 are the same as those found in operating an MQ-9: unmanned air vehicle, crew and GCS.[7] Be they for weapons testing or operations in a war zone, the

aircraft that are now termed 'drones' are far more sophisticated and perform a far wider array of functions than the original craft, but the key point here is that the nickname has stuck and is now employed in a much more formal manner.

Lev Grossman, for one, illustrates why the term has remained in common use, despite the misgivings of those who operate RPAS:

> A word about that word drone: there's a lot of ambivalence about it in the industry because of its negative associations with targeted killing. I've been corrected, and even upbraided, by drone users and manufacturers, military and civilian, for failing to use terms like unmanned aerial vehicle or unmanned aircraft system (UAS) or remotely piloted vehicle. While literally accurate, those terms have a clumsy, euphemistic feel. Hence drones.[8]

Grossman reflects the trend. 'Drone' suffices as a description, has provenance, is in widespread use and is generally understood. In which case, why should a journalist - or indeed any other commentator - use military acronyms which may not be fully understood by their audience, or employ more words than necessary in an article upon which there is a tight word limit? It is difficult to counter this point, not least since those talking about UAVs and RPAS regularly default to the convenience of 'drone', even if they are serving air force personnel. Though some members of the wider public may be comfortable with the terminological distinctions, most are not, and are arguably not even cognisant of the fact that such distinctions exist.

Furthermore, we cannot overlook the way in which the use of technical jargon and acronyms – standard day-to-day fare for those in air forces, armies and navies around the world – is interpreted by a wider audience. There is a tendency to presume that the use of phrases such as 'Unmanned Aerial Vehicle' or 'Remotely Piloted Air System' is nothing more than an attempt to obfuscate through bland language about these platforms and the manner of their use. This cynical interpretation is nothing new, as debates over the term 'collateral damage' have demonstrated.[9]

Unfortunately, popular terminology is problematic. If 'drone' is understood by its definition, 'a remote controlled pilotless aircraft,' then it is appropriate for an RPAS. It can, though, equally be interpreted simply as 'pilotless', which can then – by extension – be taken to mean that there is a lack of human involvement in the operation of such a platform, which can readily lead to dramatic commentaries about 'killer robots'. The ambiguity associated with 'unmanned' and 'drone' is the reason for the military preference for 'RPAS'. The use of this acronym, far from obscuring the reality, is an accurate representation of the presence of a pilot in the operation of the UAV and ultimately the employment of any weapons that UAV might be carrying.

This terminological debate matters, because 'drone' has become attached to the equally loaded term 'targeted killing' (seen in many quarters as another euphemism, this time for illegal

assassination) and is inextricably linked to discussion of 'drone wars', with the risk of introducing imprecision into an important area of debate. Without understanding the nuances within the terminologies employed, it becomes easy for the whole matter of what UAVs and RPAS are to be misunderstood or misrepresented, never mind the critical issue of how such platforms are utilised.

Nonetheless, it seems that efforts to dissuade the use of 'drone' are futile. It may be time for those who use remotely piloted systems to take ownership of the term; such a step would help to improve comprehension of RPAS by bringing detail and precision to the debate, rather than allowing speculation, conflated narratives and factual inaccuracy to drive discussion. It would also serve to remove some of the cynicism that 'RPAS' and 'UAV' are nothing more than efforts to bring euphemism to bear.

This, in turn, might help permit informed decision-making based upon a more accurate comprehension of what RPAS can and cannot do. It might also allow a more readily accessible distinction to be made between a 'drone' (a remotely piloted vehicle, involving significant human input) and a - 'robot' a - fully autonomous vehicle.[10]

The importance of the human factor, lost from much of the narrative and analysis at present is illustrated in the doctrinal definition that air power is, 'using air capabilities to influence the behaviour of people or the course of events', we see that this highlights that war is a human activity.[11] Technological developments might change the tactics and strategies applied, but wars originate from human political discourse, or the failure of that discourse. While the operators of RPAS are not necessarily in direct proximity to the battlefield – they can be, and often are, thousands of miles away - they are still participants in a human activity and provide human input through the medium of the platform they are operating; the RPAS/drone is not simply a technical device, devoid of human factors; as this article will demonstrate that in a number of respects, the human aspects of RPAS operation can be far greater than those facing the aircrew flying combat aircraft.

Legal Context

The 'Drone Wars' narrative and its bearing on the 'manned-versus-unmanned' debate, makes it worth conducting a very brief examination of the legal context.[12] It is clear that there is much still to be written on the law in relation to RPAS, particularly in the arena of domestic versus operational law, and the way in which extra-territorial jurisdiction of human rights law and the legal issues pertaining to cross-border operations must be considered in any debate on RPAS, and it is not the intention of this article to analyse this complex arena. It is, though, worth noting that there is, and will always have to be, a legal basis for the use of force when it is delivered through the medium of RPAS. This means that RPAS/drones are no different from any other weapon system or, indeed, munition that is used within the battlespace of any type of conflict.[13] The legal framework is also of critical importance when disentangling the difference between RPAS and 'killer robots'; the influential Human Rights Watch/International Human

Rights Clinic report *Losing Humanity: The Case Against Killer Robots*, defines 'robots' as being capable of operating with a degree of autonomy, which is, of course, true of extant RPAS.[14] This leads on to a definition of 'robotic weapons' under three categories: human-in-the-loop; human-on-the-loop (a human supervises the robot's actions and can over-ride them), through to human-out-of-the-loop were the system can choose its own targets and engage them without any human involvement in this process. The report goes on to state:

> …the terms 'robot' and 'robotic weapons' encompass all three types of unmanned weapons, in other words everything from remote controlled drones to weapons with complete autonomy. The term 'fully autonomous weapon' refers to both out-of-the-loop weapons and those that allow a human on the loop, but that are effectively out-of-the-loop weapons because the supervision is so limited.[15]

The question that arises here, though, is whether a 'drone' such as the MQ-9 Predator is a 'robot' as the report suggests. The report goes on to suggest that 'robots cannot identify with humans, which means they are unable to show compassion, a powerful check on the willingness to kill'.[16] As will be demonstrated below, the presence of humans-in-the-loop in current RPAS brings human instincts to bear, with concomitant psychological issues. Although next-generation RPAS have increasing levels of automation (the X-47 may be seen as an exemplar of development here), if such platforms require human input to select targets and to release weapons – assuming the platform is weaponised – does this mean that defining all RPAS, particularly current types, as robots with inferred linkages to a dehumanised form of warfare is inaccurate? And if this is the case, does this highlight the need to be explicit in our consideration of RPAS, which involves humans remotely, versus robots which do require little, if any human involvement? We would suggest that this apparently minor semantic distinction matters, since human RPAS operators should be subject to the same levels of accountability as, say, aircrew releasing weapons from a manned aircraft.

Drone Wars

Typical reporting of 'drone strikes' in the media can bring about multiple criticisms. These include concerns over the deaths of civilians; breaching national sovereignty and the UN charter, as well as possible illegality. Additional issues include the manner in which RPAS have been employed by the US Central Intelligence Agency (CIA), with suggestions that the lack of involvement by the US armed forces has reduced oversight of RPAS use, while intelligence underpinning the decision to strike has not been subject to sufficient levels of scrutiny.[17] A final concern is that the efficacy of strikes has been limited and perhaps counter-productive, but that the lowering of the risk threshold by making those operating RPAS remote from the fighting also reduces political nervousness about employing lethal force.[18]

'Targeted killing' is an incongruous phrase used to describe offensive lethal force against specific individuals; it is often seen as nothing more than a euphemism for 'assassination.'[19] The term has taken on particular resonance with regard to RPAS, but this rather overlooks one

key point: namely that *all* killing under the rule of law must be 'targeted', otherwise it would be illegal. The nature of the weapon system, be it an MQ-9 Reaper, an AH-64 attack helicopter, a fast jet or a sniper is irrelevant – 'targeted killing' is a far more complex and controversial construct than something simply involving 'drones', and it is in this area that the 'traditionalist' view critiqued by Dunn has clear legitimacy; the RPAS is the mechanism employed. RPAS are not the sole enablers of targeted killing, and it is the concept that should be the source of debate rather than the weapon system used, even allowing for the fact that concerns over the willingness to target individuals may have increased because of the reduced risk to one's own soldiers, sailors, marines or aircrew are absolutely legitimate – the point is that this issue is a subset of a much wider debate and should not automatically be associated with RPAS simply because they have become synonymous with this sort of operation as a result of events in Yemen and Pakistan in particular. It is perhaps germane to note that similar observations about risk-reduction were made in relation to air power in the post-Cold War era, most notably in the comment of Professor Elliot Cohen that air power, 'like modern courtship, offers gratification without commitment.'[20]

This is an issue which must be factored into the wider debate, since it is clear that the number of strikes against individuals has been considerable, and probably far greater than would have been the case were armed RPAS not available to fulfil such taskings.

David Aaronovitch's consideration of the matter, leads to him supporting drone use as a lower collateral damage option compared to inaction or a ground campaign.[21] Technically, Aaronovitch's analysis applies to air power use rather than drones. He cites up to 3400 drone strikes deaths in Pakistan, including an estimated 400 to 900 civilians, meaning 2500 to 3000 were Al Qaeda, foreign jihadis or Taleban. He suggests that the Government of Pakistan allowed the Taleban to occupy Swat in 2007, which he describes as a failed appeasement theory resulting in many civilian deaths, public decapitations, destroyed schools, and a base for attacks on the Pakistan State. He offers that during the Pakistani ground campaign to retake Swat, thousands died and hundreds of thousands were displaced. He concludes that 'to leave militants alone is to invite attacks [against civilians] in Pakistan and around the world; not conjecture. To root them out through a ground campaign would kill and displace far more civilians than drone use would'.[22]

Over the course of recent campaigns, there has been a change in the strategic risk threshold from that in the immediate aftermath of 9/11, an evolution which has emphasised the wisdom of more subtle force use within counter-insurgency campaigns. General David Petraeus directed escalatory responses were to be used, rather than a default to excessive air power for short tactical gains that risked strategic success. The phrase 'courageous restraint', attributed to General Stanley McChrystal, saw ISAF troops ordered to limit the use of force, 'against residential compounds and other locations likely to produce civilian casualties'.[23] These initiatives were evidence of a learning process for the missions, and also perhaps a product of the changed operational scenario. Both generals were directing more tactical

patience after initiating troop surges, creating a less precarious situation for ground forces and giving them more manoeuvre options than their campaign predecessors. Those tactical directives applied across all forms of military force.

Drones are not uniquely egregious in causing collateral damage, as might be inferred from some of the 'drone wars' narrative. Compared to manned platforms, the persistence of drones allows more tactical patience - of the sort required in the evolving campaigns in both Iraq and Afghanistan - and provides the ability to obtain and assess greater amounts of information about the individual under observation. This in fact reduces collateral risks.[24] Collateral damage risks apply to all military operations, whether they are manned or unmanned.

A further sub-set of the 'drone wars' debate is that the use of RPAS increases radicalisation. Once again, this seems too simplistic. Aaronovitch claims evidence suggests a reduction in terrorist incidents in Pakistan and elsewhere because of American attacks, although this does not, of course, represent a linear progression.[25] The key here is that the potential for radicalisation is most probably linked to the use of force of all kinds, rather than the nature of the platform used. Once again, the drone-related factor to be discussed is that of the willingness to make use of the platforms because of the perceived advantages they offer in terms of risk reduction.

The essential core of this debate, then, is strategy, and the strategic balance between using force or not. Focussing upon one particular mechanism for the delivery of force is not a particularly helpful approach to considering this much wider question. This element of the drone wars debate is the one with most relevance. Does the use of unmanned platforms lower the political thresholds for military intervention? This is a very important point, but must be examined from all perspectives and with consideration to multiple scenarios and contexts.

The conclusion of this argument is that lower deployment costs, lower casualty potential, and a liberal democratic desire to export and enforce human rights and law, will increase the incidence of interventions and conflict rather than reduce it.[26] Claims that drone technology alone lowered political thresholds for targeted killing seem conjectural, particularly in light of post-9/11 public and political sentiment. In this scenario, political will arguably exceeded any threshold and air and it is not unreasonable to suggest that air and missile strikes would have been authorised in the absence of drones, particularly given pre-9/11 willingness to launch such attacks against Saddam Hussein and AQ camps in Afghanistan and elsewhere.

Aaronovitch also provides an interesting, positive, perspective. He suggests that a move away from 'boots-on-the-ground' interventions should not precipitate an aversion to intervention and nation building. Aaronovitch suggests that drones allow assistance to be provided when it would be politically unpalatable otherwise.[27] This would certainly be the case when considering air power capabilities such as ISR for providing clarity in crises. How humans decide to employ technology remains critical. 'Drone wars' are not a new conflict typology,

but a sub-set of war; to drill down and focus in detail upon context-specific use of particular systems is of utility, but should not obscure much larger questions about the way in which states might chose to wage conflict, particularly through the employment of all sorts of technology. The way in which extant technology can be employed, though, is also subject to confusion. Two of the most notable areas where this applies in terms of the 'drone debate' pertain to the situational awareness of RPAS crews and their perceived detachment from the events they witness on their monitor screens. It is to these two areas we turn next.

Situational Awareness (SA)

A common claim about RPAS suggests that operators possess low SA because their world is perceived 'through a soda straw'.[28]

> During the later stages of targeting, drone operators may be hampered by what is known as the "soda straw" effect. As a weaponised drone zooms in to pinpoint the target, it loses a wider picture of the area—like viewing a small amount of liquid through a soda straw, instead of the entire glass. The soda straw effect creates a risk that civilians may move into the vicinity of the strike without being noticed by drone operators, thereby overlooked in targeting analysis.[29]

The question of field of view raises concerns about the operator's ability to detect possible collateral damage risks outside the 'straw', as well as ethical detachment concerns. Other concerns relate to platform attrition through an inability to detect threats, and the potential for mid-air collisions.[30] Additional speculation exists concerning operator capacity and sensory overload.[31] Finally, concerns are raised about the narrowing of campaign perspective to the seductive, hypnotic full motion video feed.[32]

Comparisons of the relative SA of manned aircraft and RPAS is generally speculative and made by individuals with experience of one or neither type. Aircrew in manned platforms have the benefit of peripheral vision, but an unmagnified view from the cockpit is of little use for cluttered target distinction. It can be difficult to ascertain the ground from medium altitude in the utter blackness of an unlit desert landscape, even with NVGs. Both manned and unmanned crews can select wide, relatively unmagnified sensor fields of view to permit similar spatial orientation. Resolution is reduced in wider fields of view; hence narrow, zoomed views are used for target distinction and attack.

A fallacy exists that peripheral vision from the cockpit gives an advantage during precision weapon attacks.[33] Both manned and RPAS crews use sensors to acquire and distinguish the target, and both are fixated on the cockpit-targeting screen during weapon time of flight. The target is likely to be under the aircraft fuselage, obscured from direct human sight, through the attack flight profile. A last second collateral risk is detected by manned and unmanned crews in the same way; on the sensor targeting screen. This is particularly true with stand-off weapons – the Grdelica railway bridge bombing during Operation Allied Force is a good example of this.[34]

Aircrew cite the benefit of their wingman's peripheral vision providing a defence against collateral damage unavailable to RPAS. This presumes RPAS cannot have 'wingmen'; furthermore, RPAS have a technological advantage because any FMV feed on the network can be displayed on any GCS computer monitor.[35] The vast majority of visually detected aircraft threats are perceived by wingmen rather than manned occupants, a fact of perspective. The human eyeball detects movement laterally more easily than it perceives an object closing on a constant angle. The vast majority of contemporary threats are detected, and responded to, by automated defence systems, which would be no different for equipped manned platforms or RPAS.

Risk of mid-air collision is shared by manned platforms and UAVs. RPAS operators and air traffic controllers have learned many lessons and developed robust procedures for deconfliction, much enhanced in the last few years.[36] Key to this are airmanship, training and technological developments, including the addition of Link-16 into some RPAS – not, therefore, greatly dissimilar to manned platforms.

The ICRC raised concerns of information overload, during which a plethora of information, sometimes contradictory, could saturate an RPAS operator.[37] This situation is much more likely in a manned aircraft than an RPAS. Though an RPAS has a networked mass of data available, more humans can quickly and easily be brought into a GCS to assist with processing it. This is not, of course, possible with manned aircraft. The latest fighters use numerous automated sensor-fusion routines to identify beyond visual range targets before the data is ever presented to the human for a decision to use lethal force.[38]

The criticism that RPAS hypnotise individuals from a strategic or operational perspective to tactical myopia is centred on the seductive nature of full motion video feeds; there are accounts of General Wesley Clark re-directing individual RPAS during Allied Force, presumably to the detriment of his strategic perspective as Supreme Allied Commander Europe.[39] There are, of course, occasions when that approach would be entirely appropriate for strategic targeting events; a real advantage for the networked RPAS compared to manned platforms. Nevertheless, the temptation to micro-manage must be resisted: 'rarely will [strategic and operational level commanders] have the full tactical situation and put bluntly, such activity is not their job'.[40] The criticism regarding myopia seems more appropriately directed at those receiving distributed video feed than the RPAS operators themselves.

Detachment

There is an assumption that physical distance from the battlefield means psychological and emotional detachment, with concomitant erosion of notions of sacrifice that deters the initiation of wars, leading to questions whether it is ethical to kill in the manner of sending an email.[41] This assumes a link between personal risk to life and warrior values, used to justify claims of inevitable psychological detachment.[42] 'Throughout history, as each technology has pushed soldiers farther and farther away from their foes, many lamented the effect it would have for warriors and their values....using a gun was once seen as cowardly'.[43]

Coker, drawing on Homeric tradition, argues that 'war is the ultimate face to face encounter' and that fidelity of resolution does not reveal moral character of the enemy.[44] His warnings are very appropriate for the debate on robots but less so for drones. Indeed, his study of mirror neurons can be turned to argue the advantage of drones over manned platforms.

> It's like a video game. It can get a little bloodthirsty. But it's [expletive] cool.[45]

This comment was attributed to 'a cubicle warrior' during the Iraq war. Both Singer and Coker reflect upon the worrying implication of detachment, '[with] remote soldiers no longer having any "emotional connectivity with the battlespace"'.

Questions, though, arise. Was the cubicle warrior attempting to relate a novel concept via analogy? Was he a seasoned veteran or a young man displaying bravado? Is the quote indicative of all RPAS operators, across all cultures? Whilst conjectural, the context matters – particularly when compared with the sober views of British crews, reflecting upon their lethal duties.[46]

Regardless of public banter and bravado, private squadron conversations concerning choices of when to and not to kill, despite tactical imperatives from other interested parties, are the same amongst manned and unmanned crews - extremely sombre and humane.[47]

The ICRC raised concerns that physical and emotional distance from the adversary 'makes targeting easier and abuses more likely'.[48] Yet, the military profession demands a degree of detachment to permit killing as part of warfare; too much attachment either prevents completion of duty, or can lead to emotionally charged behaviour exceeding political and moral limitations.[49]

Whetham argues that a good commander remains slightly detached, and that an RPAS operator, with an absence of fear for their own safety, would be more capable, not less, of behaving justly.[50] Aircrew traditionally have been more detached than infantrymen. Until the advent of targeting pods, visual clarity of targets was limited at best – one needs only to consider the ground resolution from the window of a commercial airliner at 20000 feet. In the 1990s, targeting pods allowed views of buildings and perhaps vehicles on their low resolution images. Contemporary sensors allow aircrew to distinguish between individuals wearing brown and black, one walking with a limp, carrying an AK74 rather than an AK47.[51]

As Coker notes, visual resolution does not reveal the moral character of the enemy. What can is persistent observation coupled with networked intelligence. RPAS have a design advantage over manned platforms in their persistence; even air-to-air refuelling of a manned platform will interrupt surveillance unless the tanker moves to the location of a surveillance aircraft.

Some manned platforms can receive in-flight data, but the scale of networked connectivity is insignificant to an RPAS. Mid-mission, an RPAS crew can access their own optical, infra-red

and radar sensors, rewind and review digital recording of the footage, manipulate current images and compare with a squadron archive of relevant imagery, peruse military mapping, satellite and radar data, access Google Earth, receive updated intelligence packs from the task force or distributed intelligence fusion centres via email, constantly talk to relevant members of the coalition community via chat rooms, talk to forward air controllers via UAV radio, and if necessary, talk to the task force commanders or forward air controllers via secure telephone from the GCS on the other side of the world.

Attachment to friendly infantry comes from that, plus a shared culture and empathy, personal relationships, either through training events, collocation or liaison visits, or through remote working relationships over a protracted period of time. Attachment is stronger when collocated, but remains relevant and tangible across dispersed sites.[52]

Conjecture that remoteness creates inappropriate behaviour appears unsupported by many credible sources. RPAS crews are conscious that their actions are recorded and observed across the networked community, including by strategic leaders; that centres any human tendency for risk shift whilst facilitating an unprecedented degree of oversight and accountability. Quintana supports this theory and offers, 'if anything, this is proving that it is more ethical to use remotely piloted aircraft than traditional combat aircraft'.[53] Whetham suggests the nature of RPAS offers a higher degree of oversight than any other military activity. He does not restrict that to the crew, but includes the restraining effect of persistent surveillance on emotional risk shift potential in any friendly land force.[54] RPAS recordings can be used to rebut allegations of inappropriate friendly troop behaviour, also acting as a reputational defence.

There is a further consideration to bear in mind, namely the quality of the view that RPAS crews obtain of their possible adversary. This is not dissimilar to the view that those involved in relatively close-quarter fighting obtain.

Coker relates the story of Emilio Lusso, a soldier on the Italian Front in 1916. Lusso held a dim view of officers and Austrians, and on one occasion found an Austrian officer in his rifle sights. Lusso's reaction was to take up pressure on the trigger – at which point the Austrian lit a cigarette. Lusso was disturbed to note that although he was focused upon killing his enemy, his trigger finger relaxed: 'in the random act of lighting a cigarette, the Austrian had become a man like himself. Lusso found himself overwhelmed by pity.'[55]

Coker uses neuroscience to explain the sniper's behaviour: mirror neurons, or empathy neurons, allow humans to grasp the minds of others not through conceptual reasoning, but through direct simulation of feeling, that is to grasp the minds of others as if their thoughts and behaviours were their own.[56]

Aircrew with contemporary sensors get a view of their adversary just like that Lusso gained. Over days of surveillance on the same target, RPAS crews will get to know an individual's habits,

shadowing them through their daily routines, gathering the intelligence that is vital to targeting decisions. If a targeting decision is made, the crews can continue watching for hours or days, choosing not to shoot – even though they legally could – preferring to wait for an opportunity with least risk of collateral damage occurring. After engaging the target, the crew will watch the aftermath for minutes or even hours, to provide as full a picture as possible. All engagements are thoroughly reviewed, dissected and debriefed by the operational accountability chain.[57]

The psychological and emotional implications of events not involving killing are often overlooked. Aircrews' professionalism enables them to compartmentalise killing as fulfilment of their military duty in accordance with the rule of law, removing clear threats to friendly forces and civilians. It does not help resolve witnessing a soldier walk towards a compound gate before being caught in the blast of an Improvised Explosive Device; the RPAS crew will keep watching the macabre scene, beaming their sensor feed to the networked community for recovery coordination. Watching over a friendly patrol under sporadic fire, which chooses tactical patience, but later loses a soldier to enemy fire when being less patient would have offered the RPAS several firing opportunities, is also hard to resolve.

The 'detached' RPAS aircrew then return home from their 'office job', interact with their family, with the images of the dead still fresh in their mind. The 'detached' RPAS aircrew returns to do the same 'office job' again for the duration of their three year tour, and perhaps into their second or third tour.[58] This observation is not to garner sympathy; rather to provide an insight into the realities faced by RPAS crews – 'detachment' is nowhere near as clear-cut as some commentators appear to believe.[59]

A continuation of the factors in this section favouring human involvement with the decision to kill, are very relevant when applied to an autonomous future. The logic of humanity, empathy and Homeric values warn of a dangerous threshold when considering autonomous attack, reinforced by the arguments on LARs and the IHL requirement for humanity.

Conclusion

This brief article attempts to separate some key issues within drone narratives to contribute towards enabling debate based on fact. Terminology is crucial to unambiguous debate and attempts to persuade adoption of acronyms appear futile. There is a case for suggesting that the military should embrace common parlance and provide clarity within the debate. Under this construct, 'drone' could describe RPAS, whilst 'robot' would distinguish autonomous systems. This may help in providing clarity in legal debate. International law on the use of lethal force applies equally to manned aircraft, drones and robots. Calls to codify the use of lethal robots, with the added layers of complexity inherent in their use are entirely appropriate but precision is required in the use of language - drone operations, which should be considered alongside other human controlled activity, rather than by being merged with discussion of autonomous systems – as noted above, there is considerable confusion in thinking on such matters, even from highly credible organisations.

Drones do not necessarily cause excessive collateral damage; indeed, they can reduce collateral risks compared with other military options. Speculation about low SA and detachment for drone operators often seems not to accord with RPAS crews' experiences of the realities of networked capabilities and persistent, high resolution surveillance systems. The intellectual and emotional attachment of remote operators to the battlefield is facilitated by networked systems and by ethos, training, liaison, and leadership; the complexities of this aspect of 'drone wars' require more precise attention by those debating the issue.

The benefits of drones, across all air power roles, will evolve and become more apparent. Unlimited by human physiology, UAVs can be optimised for persistence or agility. The alternatives are manned operations, or an acceptance of robots. Manned aviation is limited by human endurance and incurs aircraft design penalties, but the human occupant helps negate communication vulnerabilities. Complex military judgements, including human 'instinct,' on the use of lethal force will likely remain beyond autonomous technology for some time; societal consent for robots may never materialise. Drones and robots must be considered separately, bringing precision to debate.

The force multiplying potential of drones is evident. The current UK vision predicts a medium term balance of one-third unmanned to two-thirds manned. It is conceivable that balance will be reversed, but the pace of transition will be governed as much by economics, politics and commercial affairs as military factors. There is no inevitable transition to a total drone or robot force; many obstacles remain, and certain military scenarios favour manned operations. Nevertheless, the drone is a critical part of considerations for a future force.

The 'Drone Wars' narrative includes extraneous elements. It is essential when considering drones to recall that issues of sovereignty, host state consent, controlling ungoverned regions, the legality of targeted killing, transparency, generating radicalisation, and the strategic efficacy of airstrikes, are not drone-specific debates, but rooted in broader political, legal, ethical and generic air power debates. A clear understanding of drones driven by factual, experience-based input from operators is essential if considerations of RPAS as a future force or a force multiplier are to be effectively realised. Dunn's contention that drones are a 'disruptive technology' is not misplaced, but the vital ground of debate around how to use that technology often is misguided. To misquote Sir Sydney Camm, drones have five dimensions: span, length, height, capability and politics – for understanding the contribution of RPAS to future force constructs, the fourth and fifth elements must be disentangled to permit capability to inform wider debate. Only then can we be confident that decision making regarding the place of the RPAS will be properly informed.

Notes

[1] *Time Magazine*, Vol.181, No5 (2013): cover; Peter Bergen and Jennifer Rowland, 'Drone Wars', *Washington Quarterly*, Summer 2013, pp.7-23.

[2] See Peter Lee, 'Remoteness, Risk and Aircrew Ethos', *RAF Air Power Review*, Vol.15: 1 (Spring 2012),

pp.11-12 for just one example.

[3] Chris Anders, "Obama's Drone Killing Program Slowly Emerges From the Secret State Shadows," *The Guardian*, March 26 (2013), http://www.guardian.co.uk/commentisfree/2013/mar/26/obama-drone-killing-program-secret-state (accessed March 27, 2013); Diederik W Kolff, 'Missile Strike Carrier Out With Yemeni Co-operation – Using UCAVs to Kill Alleged Terrorists: A Professional Approach to the Normative Bases of Military Ethics', *Journal of Military Ethics*, 2:3 (2003), pp.240-244; Michael J Boyle, 'The costs and consequences of drone warfare', International Affairs 89:1 (2013), pp.1-29; David Hastings Dunn, 'Drones: disembodied aerial warfare and the unarticulated threat', *International Affairs* 89:5 (2013), pp.1237-1246.

[4] See http://wiredforwar.pwsinger.com/ (accessed 18 September 2013) - 'Military officers quietly acknowledge that new prototypes will soon make human fighter pilots obsolete'

[5] Dunn, 'Drones: disembodied aerial warfare', [note 2], p.1238.

[6] Noble Frankland, *The Bombing Offensive Against Germany: Outlines and Perspectives* (London: Faber and Faber, 1965), p.18.

[7] It should be noted, of course, that drones such as the QF-4 and QF-16 can be flown by a pilot (as was the case with their predecessors in American service). The gender-specific term 'unmanned' is used throughout this article simply for convenience as it is a long-established term, even though it is now entirely inaccurate in ascribing the operation of RPAS to males alone. Although 'uninhabited' briefly enjoyed favour, it has fallen out of fashion, in part because of concern that it might be seen to suggest that there was no human involvement in the operation of UAVs.

[8] Lev Grossman, "Rise of the Drones," *Time* 181-5: pp.20-21.

[9] See, for instance, Michael Mandel, *How America Gets Away With Murder: Illegal Wars, Collateral Damage and Crimes Against Humanity* (London: Pluto Press, 2004), pp.46-56 for a strident critique, and Deborah Cameron, *Verbal Hygiene: The Politics of Language* (London: Routledge, 1995) pp.72-74 for a consideration of the term 'collateral damage' and its association with the use of euphemism .

[10] To add to the acronyms, it should be noted that 'LARs' has emerged as the abbreviation for 'Lethal Autonomous Robots', but this may not be widely adopted, especially since this adds further levels of confusion to the discussion - beginning with the question 'what is an 'autonomous robot', exactly?'.

[11] Ministry of Defence, *Joint Doctrine Publication 0-30: UK Air and Space Doctrine* (Shrivenham: 2013), 1-1. Carl von Clausewitz, *On War* ed. and trans. Michael Howard and Peter Paret. (Princeton: Princeton University Press, 1976), p.149 and Michael I. Handel, War, *Strategy and Intelligence*. (London: Frank Cass, 1989), p 60 serve as just two points of reference for the extensive discussion of war as a human activity.

[12] See, for example, William H. Boothby, *The Law of Targeting* (Oxford: OUP, 2012); and ICRC, "International Humanitarian Law and the challenges of contemporary armed conflicts" *31IC/11/5.1.2* (2011), ICRC, "International Humanitarian Law and the challenges of contemporary armed conflicts" 31IC/11/5.1.2 (2011), http://www.icrc.org/eng/assets/files/red-cross-crescent-movement/31st-international-conference/31-int-conference-ihl-challenges-report-11-5-1-2-en.pdf (accessed May 11, 2013).

[13] The authors are grateful to Wg Cdr Mark Phelp for his observations on this matter; any errors of fact or interpretation are, of course, theirs.
[14] Bonnie Docherty, *Losing Humanity: The Case Against Killer Robots* (Human Rights Watch, 2012), p.2
[15] Ibid.
[16] Ibid, p.38.
[17] See, for instance, Micah Zenko, Council on Foreign Relations Policy Innovation Memorandum 31, *Transferring CIA Drone Strikes to the Pentagon* http://www.cfr.org/drones/transferring-cia-drone-strikes-pentagon/p30434 (accessed 17 October 2013); Human Rights Watch 'Transfer Drone Strikes to the Military', *http://www.hrw.org/news/2012/04/20/us-transfer-cia-drone-strikes-military* (accessed 18 September 2013); http://www.reprieve.org.uk/investigations/drones/ (accessed 18 September 2013).
[18] See, for instance, PW Singer, *Wired For War: The Robotics Revolution and Conflict in the 21st Century*, (London: Penguin, 2011), especially Chapter 21; Docherty/Human Rights Watch, *Losing Humanity*, p.39-41.
[19] William H. Boothby, *The Law of Targeting* (Oxford: OUP, 2012), pp.530-532 (also see the references therein).
[20] Elliot Cohen, 'The Mystique of US Airpower', *Foreign Affairs*, January/February 1994; see also Conrad C Crane, 'The Lure of Strike', *Parameters*, 43(2), Summer 2013, pp.5-12.
[21] David Aaronovitch, 'Drones or Jihadis: Which Would You Prefer?', *The Times*, 22 November 2012; http://www.thetimes.co.uk/tto/opinion/columnists/davidaaronovitch/article3607759.ece (accessed 22 November 2012 [subscription-only service].
[22] Aaronovitch, 'Drones or Jihadis?'
[23] Tim Ripley, *Air War Afghanistan: US and NATO Air Operations from 2001* (Barnsley: Pen and Sword Aviation, 2011), pp.162-164.
[24] William H. Boothby, *The Law of Targeting* (Oxford: OUP, 2012), p.280.
[25] Aaronovitch, 'Drones or Jihadis?'
[26] Frank Sauer and Niklas Schornig, "Killer drones: The 'silver bullet' of democratic warfare?" in *Security Dialogue* 43, (2012) (at http://sdi.sagepub.com/content/43/4/363; accessed March 21, 2013) pp.363-380.
[27] Aaronovitch, 'Drones or Jihadis?'.
[28] See, for example, Mary Louise Kelly,'The Nevada Home of the Predator Drone Craft', NPR report 16 September 2005 at http://www.npr.org/templates/story/story.php?storyId=4851765 (accessed 1 November 2013), quoting an RPAS operator; 'Taming the UAV Data Explosion', *Defense Industry Daily*, May 16 2010 at http://www.defenseindustrydaily.com/uav-data-volume-solutions-06348/ (accessed 1 November 2013), David Jordan and Ben Wilkins, 'Unmanned Aerial Vehicle Operations Since the 1980s', in Owen Barnes (ed) *Air Power: UAVs, the Wider Context* (Shrivenham: RAF Directorate of Defence Studies, 2009)p.36.
[29] 'Civilian Harm from Drone Strikes: Assessing Limitations and Responding to Harm', Written statement of Naureen Shah to Congressional Hearing on US Drone Policy 8 May 2013, https://web.law.columbia.edu/sites/default/files/microsites/human-rights-institute/files/Drones%20Ad%20Hoc%20Testimony%20Naureen%20Shah%20May%208%202013.pdf

(accessed 2 November 2013).
[30] Jordan and Wilkins, 'UAV Operations Since the 1980s' [note 30], p.43.
[31] ICRC, 'International Humanitarian Law and the challenges of contemporary armed conflicts'[note 14], p.39.
[32] This has given rise to the term 'Predator Porn' (in the United States) or 'Kill TV' (Australia).
[33] Damian Killeen, personal experience.
[34] See 'Final Report to the Prosecutor by the Committee Established to Review the NATO Bombing Campaign Against the Federal Republic of Yugoslavia, paragraphs 58-62, at **http://www.icty.org/sid/10052#IVB1** (accessed 10 November 2013). Paragraphs 63-70 cover the bombing of the Djakovica Convoy, noting the difficult for aircrew in manned platforms to visually distinguish between civilian and military vehicles at altitude.
[35] Killeen, personal experience.
[36] Jordan and Wilkins, 'UAV Operations Since the 1980s' [note 30], pp.38-39.
[37] ICRC, 'IHL and Conflicts', p. 39.
[38] Killeen, personal experience
[39] John J Cummings, 'Does Network Centric Warfare Equal Micromanagerial Warfare? Minimizing Micromanagement At The Operational Level Of War', Report for Joint Military Operations Department, US Naval War College, at **www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA415392** (accessed 13 November 2013), p.10; also Jordan and Wilkins, 'UAV Operations Since the 1980s' [note 30], pp.38-39.
[40] Wg Cdr Richard MacMahon, 'Unmanned Aerial Vehicles in the Royal Air Force – 2047', in Owen Barnes (ed) *Air Power: UAVs, the Wider Context* (Shrivenham: RAF Directorate of Defence Studies, 2009), p.58.
[41] Christopher Coker, *Warrior Geeks: How 21st- Century Technology is Changing the Way We Fight and Think About War* (London: Hurst, 2013), 119-122.
[42] Seb Cox, 'Unmanned Aerial Vehicles – Cultural Issues', in Barnes (ed) *Air Power: UAVs, the Wider Context* [note 42], p.95; Bradley J Strawser (ed), 'Introduction: The Moral Landscape of Unmanned Weapons', *Killing By Remote Control: The Ethics of An Unmanned Military* (Oxford: OUP, 2013), p.16.
[43] Singer, *Wired For War*, p.331.
[44] Coker, *Warrior Geeks*, p.122.
[45] Singer, *Wired for War*, p.332
[46] Rob Blackhurst, "The Air Force Men Who Fly Drones in Afghanistan by Remote Control," **http://www.telegraph.co.uk/news/uknews/defence/9552547/The-air-force-men-who-fly-drones-in-Afghanistan-by-remote-control.html** The Telegraph, (accessed May 18, 2013).
[47] Killeen, personal experience.
[48] ICRC, 'IHL and Conflict', p. 39.
[49] For instances of emotional attachment leading to an increased willingness to kill, possibly to the point of the commission of war crimes, see, for instance, Bradley A Thayer, *Darwin and International Relations: On the Evolutionary Origins of War and Ethnic Conflict* (Lexington: University Press of Kentucky, 2004), pp.185-192.
[50] David Whetham, "Remote Killing and Drive-By Wars", in D Lovell & I Primoratz (Eds), *Protecting*

Civilians During Armed Conflict: Theoretical and Practical Issues During Violent Conflict (Farnham: Ashgate, 2012), pp.206-207.
[51] Killeen, personal experience.
[52] Killeen, personal experience.
[53] Elizabeth Quintana, 'Unmanned Systems: Confusing Ethics', *RUSI Analysis* 20 April 2011 at **http://www.rusi.org/analysis/commentary/ref:C4DAEB5DD10A7F/** (accessed 13 November 2013).
[54] Whetham, 'Drive By Wars' [note 52], p.203.
[55] Coker, *Warrior Geeks*, p.132.
[56] Ibid.
[57] Whetham, 'Drive By Wars' [note 52], p.203; Killeen personal experience.
[58] Killeen, personal experience. Also see Lee, 'Remoteness, Risk and Aircrew Ethos' [note 2], pp.12-16.
[59] See Zygmunt Bauman, 'Wars of the Globalisation Era' *European Journal of Social Theory* 4:1 (February 2001), p. 27 and Derek Gregory, 'From a View to a Kill: Drones and Late Modern War', *Theory, Culture & Society* Vol27-28 (2011), particularly pp. 196-197.

Rights, Wrongs and Drones: Remote Warfare, Ethics and the Challenge of Just War Reasoning

By Dr Peter Lee

In June 2013 the UK Supreme Court delivered a judgement that applied the European Convention on Human Rights to British combat operations, which undermined long-standing assumptions about the status of combatants in a war zone. While, conventionally, law is deemed to follow on from ethics, the invocation of individual rights in this legal case prompts the revisiting of recent just war debate over the role of individual rights when making normative judgements about the morality of war and ethical conduct therein. The way in which individual rights discourses are deployed in the philosophical underpinning of just war theory has a marked impact on how the ethical status of combatants and their actions can be assessed. The use of the Reaper by the Royal Air Force on remote operations in the Afghanistan theatre adds a further layer of complexity to those ethical considerations. Consequently, this article will explore the nexus of remote warfare, just war reasoning and individual rights, highlighting the contradictions, opportunities and potential implications that arise when making ethical judgements in the domain of war in the twenty-first century.

Introduction

> 'A good man would prefer to be defeated than to defeat injustice by evil means.'[1]
>
> Sallust, 41 BC

On 19 June 2013 the UK Supreme Court delivered a judgement that undermined previous rulings on, and assumptions about, the status of combatants in a war zone: a concept whose legal and moral[2] antecedents can be traced back through many centuries of the just war tradition. For the first time the Human Rights Act (1998), which enshrines the European Convention on Human Rights (ECHR) in UK law, was successfully applied to a case involving the deaths of soldiers on a battlefield, a battlefield that lay outwith the geographical confines of the UK and continental Europe.

The families of three soldiers killed in Iraq when their non-armoured 'Snatch' Land Rovers were blown up by a roadside bomb, had taken legal action against the Ministry of Defence (MOD) on the basis that the MOD had not reasonably taken every step to protect the lives of the soldiers. It was argued that the soldiers' 'right to life', as enshrined in Article 2 of the ECHR, had been violated by the negligence of the British Army. The key element of the plaintiffs' argument was that soft-skinned vehicles should not have been used in a high-risk environment when armoured vehicles were available, either already in the British Army's inventory or available to purchase on the open market. In its Judgement the Supreme Court justices explained: 'The Snatch Land Rover claims … are all directed to the substantive obligation, which requires the state not to take life without justification and also, by implication, to establish a framework of laws, precautions, procedures and means of enforcement which will, to the greatest extent reasonably practicable, protect life.'[3]

In making its judgement the UK Supreme Court held the MOD legally liable for actions that had not gone far enough in protecting the lives – and rights – of the soldiers concerned. The court specifically rejected the MOD's claim that there was no case to answer on the basis of combat immunity, a claim that manifested itself in two ways. First, that the soldiers were outside the UK's jurisdiction; and second, that the MOD owed no such duty of care at the time of the soldiers' deaths.[4] The UK Defence Secretary, Philip Hammond responded to the judgements by stating:

> I am very concerned at the wider implications of this judgment, which could ultimately make it more difficult for our troops to carry out operations and potentially throws open a wide range of military decisions to the uncertainty of litigation … It can't be right that troops on operations have to put the ECHR [European Convention on Human Rights] ahead of what is operationally vital to protect our national security.[5]

The Supreme Court judgement, together with the response of the British Defence Secretary, highlights an ever-present – and in a European context in particular, ever growing – tension in

the international political system as it currently operates, and against which political policies, military doctrine, and ethical and legal arguments must be formulated: the rights of individuals *versus* the rights of states. In their respective positions, the Supreme Court prioritised the human rights of individuals, while in his opposition to the Court's judgement the Defence Secretary stressed national security and the importance of protecting it, even at additional risk to soldiers' lives. The court's decision was neither unanimous nor uncontroversial, and the justices acknowledged that the matter should be approached with caution, lest they run the risk of undermining the capacity of a state to defend itself and its interests.[6] Further, perhaps dramatically, the judgement stated that 'democracy itself may be at risk,' if a state's resort to martial force be unreasonably curtailed.[7]

The gravity of the potential consequences of applying individual rights in this way – as highlighted by both the Defence Secretary and the Supreme Court itself – is complicated further by the proliferation and use of new technologies to deliver lethal force from great distances across continents and multiple jurisdictions: especially for the Reaper. While, conventionally, law is deemed to follow on from morality, the invocation of individual rights in this legal case prompts the revisiting of recent just war debate over the role of individual rights when making normative ethical judgements regarding the use of military force. The way in which individual rights discourses are used to underpin just war theory has a marked impact on how the moral status of combatants and their actions can be assessed.

Consequently, this article will explore the nexus of remote warfare, just war reasoning and individual rights, highlighting contradictions, opportunities and potential implications for making ethical assessments in the domain of war. The first section will begin by setting the context of the subsequent discussion in actual – as opposed to fictionalised or sensationalised – Reaper operations, outlining a number of existing approaches to making moral assessments of RPA or 'drone' activities.[8] The second section will focus on the use of individual rights in two competing just war approaches. Analysis will contrast Michael Walzer's just war reasoning, which subsumes individual rights within the more important rights of states, with Jeff McMahan's approach, which prioritises individual moral rights. I will examine the different ways that each uses the notion of rights in assessing the moral status of combatants and their actions. The remainder of the article will then explore the implications of that moral debate for the domain of remote military operations: for the use of Reaper in particular. Underlying this approach is the assumption that war, cultural mores, and evolving technologies shape just war reasoning at least as much – and possibly more – than just war shapes the clash of martial forces in pursuit of political ends.[9]

'Easy' Killing and Risk-Free War

The Reaper pilot and sensor operator stared intently at the bank of screens in front of them, their concentration fixed on one individual. Their target had been identified by more than one intelligence source and extended observation had confirmed both his identity and activities as an active Taliban combatant. The mission intelligence coordinator continued to actively

provide them with checks and updates, while at the same time legal sanction to attack the target – within the dictates of their rules of engagement – had been granted. The target was also sufficiently isolated to ensure that nobody else would be struck by the blast or shrapnel from the impending strike. As the selected weapon was about to be released and the target killed, the sensor operator thought he glimpsed, fleetingly, what may have been another person encroaching onto the camera's field of vision. Although once again only the target could now be seen on the screen, the sensor operator was reluctant to prosecute the target just in case someone, or more than one person, was standing just outside of their narrow field of vision – and therefore potentially at risk. A discussion ensued. The pilot had not seen anything untoward but the intelligence coordinator was unsure: there *might* have been someone there. The pilot reminded them that they were cleared to fire and that their rules of engagement allowed them to do so. Legal sanction was in place. With the crew split over whether or not to proceed with the attack, given even the small possibility of killing or maiming an innocent passer-by the pilot agreed with the others to abort the attack. Checks would continue and another suitable opportunity to strike the target – without the potential risk to an innocent bystander – would be sought.[10] [11]

This incident raises a number of practical and moral questions: On what basis is the Reaper (or Predator or other armed remotely piloted aircraft) crew permitted to take the life of a fellow human being? What moral status is held by the enemy combatants involved, both the targets on the ground and the combatants operating the Reaper? In addition, what makes an individual liable, or not, to attack by deadly military force? These questions have been and continue to be subject to numerous enquiries by academics and practitioners alike. In the incident outlined above, legal authority had been granted for the strike and the crew involved would have been protected from prosecution if they complied with their rules of engagement (ROE) and unintended collateral damage – the wounding or death of a non-combatant – had occurred. Contrary to popular mythology, the crew involved were not itching to pull the trigger in the latest deadly round of 'war by Playstation'; instead, their discussion focused on whether it was 'right' – an ethical judgement – to release the weapon in that particular situation.

David Whetham provides a particularly thoughtful overview of moral and political challenges raised by the use of remotely piloted aircraft in 'Killer Drones: The Moral ups and Downs'.[12] Like most Western commentators setting out to assess the moral implications of remotely conducted asymmetric operations against a technologically inferior enemy, Whetham draws upon the memes and themes of just war, with familiar notions of *jus in bello* providing a touchstone for his analysis. In this context he introduces but does not explore in depth the moral calculus involved in removing physical risk from one group of combatants (Reaper pilots, for example).

In the context of RPA operations, the relationship between physical risk, ubiquity and moral legitimacy is recognised, though not explored, in UK defence doctrine.[13] At a UK parliamentary

level, Louisa Brooke-Holland has provided members of parliament with a formal Briefing Note which touches slightly upon the ethical and moral implications of the use of remotely piloted weapons, and in places repeats – uncritically – assertions made by proponents and opponents alike.[14] For example, she quotes Medea Benjamin, author of *Drone Warfare: Killing by Remote Control*, who has stated: 'The biggest ethical problem with drones is that it makes killing too easy'.[15] When allowed to stand alone and unquestioned such a comment is granted greater credibility than it deserves in a complex debate. It is particularly disturbing in a document that might be the only basis on which some UK MPs will make judgements about the practicality and morality of remotely piloted aircraft operations. What does Benjamin mean by 'easy'? From a technological standpoint, killing by Reaper is monumentally difficult. Huge numbers of people – again, contrary to urban myth – are needed to remotely deliver lethal ordnance: from software engineers to hardware engineers, traditional airframe technicians to communications specialists, armourers to logisticians, intelligence coordinators to legal advisors, and so on. Furthermore, conventional aircraft such as the Tornado or Typhoon have significantly greater destructive potential than the remotely piloted Reaper because of the larger payloads they can carry. Perhaps, however, killing by 'drone' is meant to be psychologically 'easy'.

Such an assumption is shared by Cole *et al* who state boldly: 'Operators, rather than seeing human beings, perceive mere blips on a screen. The potential for this to lead to a culture of convenient killing may well be reason to consider banning this new type of lethal technology'.[16] Minimal evidence and maximal hyperbole is invoked as part of an anti-drone campaign: all without direct reference to the experience of the operators involved or any appreciation of the actual level of close-up detail that is available to the Reaper crew.[17] On practical grounds alone such a simplistic argument should be rejected: the political and reputational cost to both the UK and the RAF of allowing 'disconnected' sociopaths to indulge in such so-called 'easy' and 'convenient' killing (even ignoring the inconvenient presence of multiple layers of legal and institutional oversight and accountability) is beyond calculation. That some individuals can accept such claims without demur says more about their credulity than the validity of the claims. In contrast, one Reaper pilot describes his experience:

> I have killed the enemy from both [conventional aircraft] and from the Reaper. The body's reactions are the same – it surprised me. Your mouth goes dry and the hairs on the back of your neck stand up. Everything goes tense and you get that sick feeling in your stomach. You know what you are about to do.[18]

Of course, one individual's account does not constitute empirical evidence of perfect, unerring behaviour in every circumstance. However, it will hopefully encourage greater analysis and further research, while discouraging the spread of unthinking, uncritical presumptions that often seem to be based on little more than a few hours' experience playing *'Call of Duty'* on a computer. The physical reaction described here does not suggest that killing has become 'easy' for the person/people involved. And finally on this belaboured point, does 'easy' refer

to the sheer numbers that can be killed? It always seems morally perverse to resort to simple arithmetic when human lives, and deaths, are involved. For example, according to the United Nations, 'as many as 1 million people are estimated to have perished' in Rwanda in the weeks following 6 April 1994.[19] They were killed using mainly machetes and traditional farming implements. I would not like to speculate how psychologically difficult it was to take part in that killing but, technically speaking, it was 'easy', highly effective in an evil sort of way, and all of the many thousands of weapons involved could probably be purchased for less than the price of one precision guided missile.

Much more nuanced in her analysis of remotely piloted aircraft operations is Alison Williams, who critically engages with the 'spatial practices' involved and the 'idea that the bodies of the aircrew are becoming less important'.[20] In response to the common accusation that remote operations are 'risk-free' to the crews involved, she goes on to observe: 'commentators mistakenly assume that it is only the physical body that can be damaged by warfare'.[21] To a lesser extent, James Cook considers the moral implications of separating combatants from combat, arguing that the 'relatively unique status of RPA pilots and cyber operators may well challenge the [just war theory]', especially if those combatants are not adequately separated from civilian populations.[22]

While the foregoing, and the rapidly expanding 'morality of 'drones'' oeuvre, strives to make normative moral assessments of killing at a distance, this paper turns now to a more abstract consideration of the philosophical means that make it possible – drawing on just war discourse – to even speak of the morality of war in general and Reaper operations in particular.

States, Rights and Just War

Since 1977 and the publication of his *Just and Unjust Wars*, Michael Walzer has provided a uniquely influential voice in modern just war theory. Nicholas Rengger goes as far as to described Walzer's *magnum opus* as 'unambiguously the most influential academic reconsideration of the tradition in recent times'.[24] Over the past four decades Walzer's ideas have been tested, challenged and ranked as first among equals alongside those of other just war luminaries such as James Turner Johnson and Jean Bethke Elshtain. Walzer – like Johnson,[25] Elshtain and many others – locates his work firmly within the just war tradition and draws upon enduring historical concepts therein in order to make judgements about the morality of war in the twenty-first century. Setting his work within what he calls a 'legalist paradigm',[26] Walzer draws upon the notion of individual rights to provide a philosophical foundation for his just war theorising. Contrarily, the most concerted and sustained challenge to Walzer's just war theory has come from Jeff McMahan, who argues 'that some of the principles [Walzer] defends do not and cannot derive from the basic moral rights of individuals and indeed, in some cases, explicitly permit the violation of those rights'.[27] The remainder of this section will explore key points of difference between these two distinct approaches to making moral assessments concerning war, before going on to explore their significance for RPA operations in the final section.

While Walzer relies on individual rights as a key foundation on which to base his just war theorizing, those rights are set in the context of, or subordinated to, state rights: with the origins and the nature of the relationship between the two left largely undefined in his *Just and Unjust Wars*. He writes of the relationship between the two (individual rights and state rights):

> Individual rights (to life and liberty) underlie the most important judgements that we make about war. How these rights themselves are founded I cannot try to explain here. It is enough to say that they are somehow entailed by our sense of what it means to be a human being. If they are not natural, then we have invented them, but natural or invented, they are a palpable feature of our moral world. States' rights are simply their collective form.[28]

It appears, superficially, that Walzer grants primacy to individual rights when making judgements about the morality of war. However, the relationship between individual and state rights is insufficiently defined to confidently support such an assumption. If his just war theory somehow rests on individual rights, the relationship between those rights and waging war is mediated by the state: state rights therefore being granted priority over the individual rights.[29] He writes of the relationship between the two: 'The rights of states rest on the consent of their members. But this is consent of a special sort. State rights are not constituted through a series of transfers from individual men and women to the sovereign or through a series of exchanges among individuals.'[30]

Lackey makes a bold, if over-simplified, assessment of the place of personal rights in Walzer's *schema*, noting, 'Walzer's theory is no simple affirmation of personal rights against the encroachment of the general interest: *the whole of his theory of just wars* hinges on the notions of the rights of nation-states, not individuals'.[31] It is clear from Walzer's words above that individual rights play a significant role in his just war theory. In addition, Brian Orend is critical of Walzer's lack of detail at this point, noting, 'It is ironic that so much weight is put on human rights in Walzer's just war theory yet so little is said either about their nature or their justification'.[32] Perhaps Orend does not go far enough in his criticism here. Not only does Walzer avoid explaining or justifying how he forms the basis of his rights argument, he appears at best apathetic and at worst ambivalent about how these rights come to *be*. Walzer has no intention of debating the benefits of natural law, or any other philosophical[33] basis for his rights-oriented arguments. It therefore appears that his pragmatism is more concerned with the application of these rights within his system than with explaining how they exist in the first place: his conception of rights being an *assumed*, rather than a defined, moral source.[34] Consider some words of Walzer on the relationship between politics and philosophy concerning the validation of individual rights:

> philosophical validation and political authorization are two entirely different things. They belong to two entirely distinct spheres of human activity. Authorization is the

> work of citizens governing themselves among themselves. Validation is the work of the philosopher reasoning alone in a world he inhabits alone or fills with the products of his own speculations.[35]

Walzer appears unwilling to resolve any tension between the nature of rights and their origins. In effect he has bracketed, or set aside, questions concerning the theoretical basis of his rights approach to just war, concentrating instead on the application of his just war theory with practical examples: typically prioritising the role of states. While this has enabled him to address the practicalities of his just war arguments, the lack of clarity over the relationship between individual and state rights – as the basis for his just war arguments – would later present problems when challenged by McMahan's more individual rights-focused argument. Furthermore, they highlight a limitation of his theorising when it is applied to the kind of military interventions that have occurred since the end of the Cold War: specifically, when one protagonist is a sub-state entity. Despite the foregoing, Walzer's commitment to the state in his political and just war writings is not that of a blinkered idealist, rather it comes with demands and expectations, especially in the legitimate use of force in self-defence: He writes:

> The moral standing of any particular state depends on the reality of the common life it protects and the extent to which the sacrifices required by that protection are willingly accepted and thought worthwhile. If no common life exists, or if the state doesn't defend the common life that does exist, its own defense may have no moral justification.[36]

Though these words were originally written in 1977 they include a prescient definition, even if not intended at the time, of what is commonly referred to today as a failed state. If we take a strict reading of Walzer's description here, Afghanistan still fails to meet the criteria – at least in moral terms – of a fully functioning state. For all of the monumental efforts and sacrifices made by UK and NATO military personnel, only a fool or a blinkered optimist would begin to claim that some credible form of common life exists in Afghanistan in 2013, and that it is being adequately defended by the Afghan police, army and government. While Walzer does not set out to define or specify how the rights of states are constituted, he makes it clear that these rights are, to some extent at least, related to or dependent upon the rights, and common life, of the individuals who make up that state. It is in this context that his political and theoretical priority lies with the rights of the state. Against this backdrop Walzer's just war theory is located primarily in a 'global community [that] is pluralist in character, a community of nations, not of humanity, and the rights within it have been minimal and largely negative, designed to protect the integrity of nations and to regulate their commercial and military transactions.'[37]

McMahan's sustained critique of Walzer's just war concentrates primarily on the paradoxical status of individual rights and state rights. Although he does not expound the relationship between the two kinds of rights, Walzer repeatedly confirms that they both exist and support his just war theory. McMahan, however, opts for a highly selective reading of Walzer's

prioritisation of state rights, using the domestic analogy[38] to attribute claims to Walzer that Walzer does not claim for himself. McMahan states: 'If we conduct our thinking about war by focusing on relations among states and treating states as if they were individuals with rights that are analogues of the rights of persons, the actual rights of actual persons become essentially invisible'.[39] Going further he adds: 'If we take the domestic analogy seriously, it should lead us to treat individual persons as if they had no more significance in relations between states than a person's individual cells have in relations between persons'.[40] Put more simply – perhaps too simply – for McMahan, Walzer's prioritising of the rights of states makes individuals rights redundant, or at least insignificant.

McMahan produces a sequence of logical steps in this argument, each of which makes sense when viewed on its own terms. However, the intellectual sleight of hand comes in the assumptions that underpin McMahan's approach where he implies that the domestic analogy, as he presents it, is somehow representative of Walzer's position when the reality is significantly different. Over many years Walzer has consistently sought to retain the tension between individual rights and human rights in his work, even if he has not defined the relationship at length. McMahan, however, claims that Walzer has consistently ignored the rights of individuals in his just war theorising. Taking his argument to its logical conclusion, McMahan considers that where a state 'has acted in such a way as to forfeit its right against attack, and if all its citizens are equally part of the state, then it seems that they should all be legitimate targets of attack.'[41] He somehow suggests that Walzer's just war theory eventually, through a series of logical leaps, takes us to a position where within an aggressor state there is no difference between combatant and non-combatant, innocent and non-innocent – however those terms are defined – they are subject to legitimate attack. However, the only way he can make that argument is by omitting, entirely, Walzer's repeated acknowledgements that individual rights and state rights are somehow interdependent. McMahan's ultimate claim that the domestic analogy has led to 'collective responsibility, collective guilt, collective liability, and collective punishment' would be more relevant if he provided examples to support his case.[42] It would also be more impressive if he could demonstrate the presence of such intended outcomes in Walzer's writings in particular, and in the just war tradition more broadly. Significantly, however, McMahan's partial reading of Walzer and his associated selective application of logical progressions has an important bearing on the moral status of combatants, and it is to this aspect of just war that we now turn.

The Moral Standing of Combatants

Walzer broadly summarises the moral order that enables the conduct of war to be described, disputed and justified or otherwise as the 'war convention'.[43] This war convention is made up of 'the set of articulated norms, customs, professional codes, legal precepts, religious and philosophical principles, and reciprocal arrangements that shape our judgements of military conduct'.[44] Given the diversity of sources Walzer calls upon, his war convention should be understood more as a loose coalition of ideas that frame his moral arguments than a coherent, succinct theory. He goes on to describe the war convention as having been 'expounded,

debated, criticized, and revised over a period of many centuries. Yet it remains one of the more imperfect of human artefacts: recognizably something that men have made, but not something that they have made freely or well'.[45] The strength of Walzer's admittedly ambiguous approach is that it leaves scope for reinterpretation as time and circumstance changes. In that regard his contribution to the just war tradition is in keeping with his many predecessors. The weakness of his approach is that it remains vulnerable to a focused and sustained critique – such as that carried out by McMahan.

Crucial in Walzer's theorising, and a dominant assumption within the just war tradition for centuries, is viewing enemy combatants, regardless of whether they fight either as part of an aggressive army in an unjust war, or as part of an army acting justly in self-defence, as moral equals. This moral equality rests, in Walzer's just war theory, on the ability to distinguish between categories of people – combatants and non-combatants. For Walzer, non-combatants are part of a broader category he refers to as 'innocent people' who, because they pose no direct threat to their enemies cannot lose their rights (for example, their right to life).[46] Non-combatants are 'innocent' no matter how good or evil the decisions of their political leaders with regard to war. Further, combatants, at least regular combatants who serve in recognised, state-sanctioned, uniformed militaries, lose that presumption of innocence because of the threat that they pose to enemy lives during times of war. In addition, for Walzer, combatants gain more rights – such as the right to kill under particular conditions – during times of war while simultaneously accepting a reduced right to life.

McMahan challenges the view that soldiers engaged in a just war while defending innocents somehow 'only' hold moral equivalence to those soldiers whose actions may be contrary and unjust: 'It does not seem that people can forfeit or lose moral rights simply by defending themselves and other people from unjust attack'.[47] Therefore, for McMahan, soldiers fighting in a just war to defend the innocent should not lose any of their individual rights to life. He adds: 'So unjust combatants use wrongful means – the killing of people who are innocent in the relevant sense – to achieve ends that are unjust. It is hard to see how that could be morally permissible'.[48] At first glance it appears that McMahan makes a valid point – the combatant fighting a just war in a just manner must surely be acting ethically, while the combatant fighting an unjust war using wrongful means must be acting unethically. Therefore, the rights of those fighting justly should be protected. McMahan's approach certainly appears to anticipate the Supreme Court ruling on the rights of UK soldiers outlined at the beginning of this article.

The key to understanding McMahan's approach to the moral equality of combatants is to recognise that he bases that equality on the application of assumed *universal* individual moral rights – with no consideration of the role of states. His unjust combatant – one who fights in an unjust war – violates the rights of the just combatant, so they cannot in any way be considered as moral equals in the way that Walzer advocates and which the war convention, broadly understood, accepts.

Again, McMahan's capacity for logical progression of argument – within the constraints and assumptions that he does not always make clear – is impeccable. However, in basing his own just war reasoning on an application of universal moral rights, thereby making combatants responsible for making their own judgements about whether or not a war is just and therefore whether or not to participate in it, McMahan places an unrealistic expectation upon soldiers, sailors and airmen to make moral judgements about the cause for which they are being asked – ordered – to fight. He writes that 'if soldiers lack a just cause, there are no goods that they are justified in pursuing by means of war'.[49] They therefore act in an unethical way simply by taking up arms when ordered. He also argues that where just cause is absent there can be no discrimination, because,

> The distinction between legitimate and illegitimate targets does not coincide with that between combatants and non-combatants. Rather, what discrimination requires is that soldiers target only those who are morally responsible for an unjust threat or for some other grievance that provides a just cause for war.[50]

McMahan's case here is logical in that one argument follows another. This logical progression rests on his assumption that soldiers are fully able to ascertain whether or not the course of action they are being asked to pursue is supported by a just cause. Further, they can *only* use force against someone who is morally *responsible* for an unjust threat. However, the responsibility for the existence of an unjust threat is typically held at a much higher level by political leaders. If McMahan's logic is extended where does it stop? If soldiers are held to be morally blameworthy for engaging in war – despite not having access to all the information held by senior political decision-makers – do the civilians who feed those soldiers share in the collective responsibility, thereby making themselves liable to collective punishment?

Walzer's attitude towards McMahan's approach to just war might be described as respectful scepticism. For Walzer, McMahan's attribution of moral responsibility to the individual rather than the collective (of, say, civilians or soldiers, combatants or innocents) is idealised and unworkable in practice. Walzer's response is based primarily on the impracticality of applying McMahan's ideas to the unpredictable and awkward business of war. Walzer's lack of a detailed discussion of the relationship between individual rights, state rights and the individual's moral standing in war, leaves him open to the charge of prioritising pragmatism and practicality over theory. Conversely, McMahan's perceptive, and in places selective, development of just war ideas based on universal individual moral rights leads to eloquent arguments that impress with their logic but often have questionable application in a messy world characterised by overlapping political self-interests, moral ambiguity and recourse to martial force in less-than-clear circumstances. What cannot be ignored, in Europe at least, is that the application of the ECHR to British soldiers in Iraq – a theatre of combat operations geographically separated from Europe – changes the social, legal and political landscape within which ethical debate surrounding individual rights and war takes place. As we proceed to the final section of this paper discussion returns to remotely piloted aircraft operations, examining how the

application of the contrasting just war approaches of Walzer and McMahan – specifically their respective approaches to individual moral rights – significantly shapes any moral assessment of Reaper operations in Afghanistan.

Morality and Remote Warfare

Contrary to McMahan's reading of Walzer and his analysis of who may or may not be legitimately attacked in war, Walzer's just war theory does not permit the blanket killing of the innocent; he does, however, grant exceptions to his general prohibition on the killing of the 'innocent'. For example, on grounds of 'military necessity'[51], if the avoidance of civilian deaths will present undue risk to the lives of combatants or to a militarily essential target. He describes this as 'not a retained but a war right'.[52] This 'right' to kill civilians in some situations is captured in international humanitarian law, with the Geneva Conventions prohibiting only attacks 'which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which *would be excessive in relation to the concrete and direct military advantage anticipated*'.[53]

Assessing the competing rights located in noncombatant immunity, military necessity, and undue risk to the lives of combatants, involves a utilitarian calculation in which subjective bias will be all but impossible to avoid.[54] The non-combatant will prefer an absolute right to life even if it renders military action impossible, while the military commander will prefer the maximum legal and moral room to manoeuvre (so to speak) when making operational decisions. The political leader, meanwhile, will often tend toward whichever of these two positions most serves their ends while minimising negative repercussions for themselves (as opposed to repercussions for the combatants or vulnerable non-combatants, though these factors may all be linked). Take the situation outlined earlier, where a Reaper crew was legally authorised to attack a target, but chose not to fire *just in case* an innocent bystander standing just out of their field of vision might be hit by the blast. It would be difficult for anyone to credibly argue that the crew acted in any way other than ethically. The context suggests that there was time to double-check that the prospective blast zone was clear before any subsequent attack.

If, however, the Reaper attack had been time critical and a major military advantage would be lost without the immediate striking of the target – say, allowing a Taliban commander and several IED-makers[55] to proceed with several waves of attack – the target could have legally been prosecuted: even if an innocent bystander was hit. In Walzer's terms, such an act, even with the death of the non-combatant, could still be regarded as a moral action, especially viewed in utilitarian terms. In McMahan's individual-rights approach, however, there are no circumstances in which an innocent bystander can lose their right to life: he refers to 'the *exceptionless* prohibition of intentional attacks on civilians or non-combatants'.[56] Therefore, the Reaper crew would be acting immorally if they fired a weapon knowing that it would likely cause a non-combatant's death or grievous wounding: even if they achieved a significant military advantage for their allies in the process, and saved the lives of numerous other non-combatants who would otherwise be killed by IED and in other Taliban attacks.

One further factor to consider in this scenario is the political dimension. Each country's ROE – where the military is legally constituted in a state context – are frequently designed to conform to both domestic law (of both the sending and the host country), and international humanitarian law in the shape of the Geneva Conventions. In an environment like Afghanistan in 2013 it is feasible that ROE can be satisfied, a moral case for action can be made in terms of Walzer's 'military necessity'[57] argument, and yet an attacking force – using the Reaper or another weapons platform – can choose not to engage. If Clausewitz's maxim that war is a continuation of politics holds true (and I will grant here that it does), political leaders – for reasons of their own – may require or demand a level of non-combatant immunity that transcends the minimum required by ROE, the Geneva Conventions, or the moral permission granted in Walzer's *schema*: zero civilian casualties. In effect, they would appear to be invoking McMahan's absolutist position on the killing of the innocent. However, in reality their intentions and motivations would not be based on, or even associated with, McMahan's moral claims about the importance of individual rights. A political intent could be prompted by a desire to avoid the deaths of innocents as a means of making it easier to negotiate the end of hostilities with an enemy. Less honourably, a political leader may simply wish to avoid negative newspaper headlines for reasons of personal or party-political advantage. In such a situation – and it is not difficult to imagine it arising – the moral imperative of the combatant is subsumed within higher political aims as *jus in bello* surrenders moral priority to *jus post bellum*.

Perhaps the most potentially serious moral implication of invoking McMahan's conception of individual moral rights-based just war is to be found in his rejection of key features of Walzer's just war theory and the war convention more generally. McMahan rejects, for example, the notion that belonging to a particular group of combatants brings with it a liability to be attacked as well as the right to attack an identified and identifiable enemy. He writes: 'My most serious concern about Walzer's argument derives from his failure consistently to adhere to the rejection of group membership as a basis of liability to attack'.[58] For McMahan, *contra* Walzer, membership of a particular group – the Royal Air Force, the US Army, the Taliban – does not in itself automatically grant to the enemy an inherent right to attack *any* member of that group in time of war. That is, if I am not threatening you or endangering your life then you have no right to threaten or endanger mine: 'In short, if liability is a function of action and not membership, immunity must be a function of the absence of action and not of membership'.[59]

There is one logical application of McMahan's individual-focused just war reasoning that holds particular moral significance for individuals involved in remote operations, such as the RAF Reaper crews based in the US or the UK who fly aircraft over Afghanistan. Namely, when a person is physically separated from the battlefield by thousands of miles and *cannot* be attacked by an enemy who is not equipped to do so. For McMahan, that person has no right to endanger an enemy combatant just because he belongs to the enemy's army or militia: if I do not threaten you as an individual I must be immune to attack from you. Hence, using McMahan's line of logical reasoning all remotely piloted aircraft operations against the Taliban[60]

in the Afghanistan theatre must, *de facto*, be immoral. Since the Reaper sensor operator in Creech Air Force Base cannot – as things currently stand – be attacked by a member of the Taliban, then (according to McMahan) he or she can have no right to target and kill an enemy combatant who is a member of the Taliban.

Returning to Walzer's just war reasoning, and the relationship between the moral standing of combatants and the degree of risk they endure in carrying out their duties. It would appear, therefore, at least by focusing in the individual-rights aspect of Walzer's just war, that the moral standing of Reaper pilots and sensor operators is problematic: the degree of risk they share in conducting operations is not equivalent to the risk endured by their targets or potential targets, or their allied ground combatants in the Afghanistan battlespace. The lack of risk-bearing by Reaper crews suggests an imbalance in the individual-rights aspect of Walzer's moral equation that weighs the combatant's right to take the lives of others against the right to preserve his or her own life. However, to come to such a conclusion would be to overlook the crucial philosophical basis of Walzer's just war outlined previously. For although individual rights – whether that be the right to take life or the right to preserve life – are a key feature of his moral framework, Walzer consistently sets those rights in the context of prioritised state rights and the rights of the military collective.

As a result, the right of a Reaper sensor operator to kill a human target[61] in Afghanistan does not rest solely or even primarily on his or her individual moral status as a combatant; that right rests in turn on the more important or higher order right of the state to defend itself and the (somehow) aggregated or collective moral rights of the individuals therein. Further, without the right to protect fellow combatants who are being attacked – for example, either using an artillery barrage from several miles away or using a Reaper from thousands of miles away to protect an Army patrol on the ground in Afghanistan – the very idea of a legitimate, collective state-sanctioned armed force descends into parody. Not every act on or around a battlefield can be reduced to, or legitimately called, an act of self-defence in an arena of equivalent risk. Examples of this asymmetry include firing long-range artillery against an enemy armed only with rifles, dropping bombs using conventional aircraft on an enemy who has no air defences, or firing heavy guns or missiles from a ship against a target with no maritime capability. Further, it has been the aim of political leaders and military commanders since the dawn of time to achieve asymmetric advantage on the battlefield: the advent of the longbow achieved, at least temporarily, a tactical advantage no less significant than that provided by modern-day RPA. However, tactical asymmetry does not equate to moral asymmetry. It is a naïve reading of the history of warfare that equates chivalrous conduct to a desire for a 'fair' fight: generals and soldiers have always sought every advantage possible over an enemy determined to kill them. Individuals such as Reaper operators can and do operate as moral agents within a legitimate, sanctioned, state-centric moral framework of the type advocated by Walzer and which has dominated the just war tradition for centuries. The following personal account from a Reaper pilot – and it is worth quoting at length – demonstrates both the theory and practice of discriminating between combatants and non-combatants:

> I've had multiple strikes, where waiting a little longer, or using the extra situational awareness tools in the Reaper have resulted in much better outcomes than you'd have got from a manned aircraft in the same setup. It happens almost every day. My last flight involved working with [soldiers on the ground], who wanted us to provide some ISR[62] on a hotly-contested area where they encounter a lot of IEDs and a lot of sporadic, harassing fire. We saw, before sunrise, a man leave a compound and go to an area behind a building. He started digging, interacting with the ground. The controller [on the ground], saw that and immediately suggested that it was an IED, and started trying to arrange permission for us to strike under the "hostile act" ROE. His thinking was that there was a recent IED strike nearby, it was suspiciously before sunrise, and this was near an entryway to the compound, so probably a defensive IED.
>
> My crew disagreed, and as we watched longer and more closely, we could pick out some of the tools he was using and started to assess them as regular farming tools. Eventually with the first fringes of sunrise, we could tell he was just seeding a small patch of ground. Watching him for an hour let us see that he had none of the hallmarks of a traditional IED emplacer; there was no rapidity, no hurry, no equipment, no lookout … I had a team inside the ops room I could talk to at length on the phone; second/third/fourth opinions available as required, and a feed that could be instantly stopped, rewound and reviewed to gather more information. A manned aircraft with less equipment, less time, and a poorer camera would have almost certainly considered engaging [earlier].[63]

Discriminating between a legitimate target and an innocent civilian going about his business lies at the heart of this example. Far from making it easier or more convenient to kill a prospective target, the Reaper's persistence and close-up view of events below enabled the crew to analyse what was happening in considerable detail and avoid an unnecessary death. Such caution challenges many ill-informed and oft-repeated assumptions about Reaper operations: the crew's concerns prompted by a complex interplay of rules of engagement, commander's intent, and a desire to act ethically at the extreme of human activity – killing another human. As one sensor operator summed up these three considerations: "Keeping the lawyers happy, the boss happy, and letting me sleep at night."[64]

Walzer's moral framework is far from perfect yet he still strives to allow the co-existence of moral agency and individual rights in complex military operations, which are shaped by changing and sometimes unclear political constraints. In response to McMahan's challenges in a number of areas, but particularly over the issue of assigning moral responsibility to individuals rather than collectives, Walzer writes the following:

> What Jeff McMahan means to provide ... is a careful and precise account of individual responsibility in time of war. What he actually provides, I think, is a careful and precise account of what individual responsibility in war would be like if war was a peacetime

> activity…I don't deny [his] perceptiveness; I only want to deny its relevance to the circumstances of war.[65]

Many who are steeped in military tradition might instinctively sympathise with Walzer's sentiments here, recoiling from some of the impractical implications for future wars of McMahan's ideas. This seems to be the concern of the UK Defence Secretary highlighted in the Introduction who said, 'It can't be right that troops on operations have to put the ECHR [European Convention on Human Rights] ahead of what is operationally vital to protect our national security.'[66] However, they should not dismiss McMahan's challenge out of hand: individual rights, in Europe at least, continue to increase in prominence and the UK Supreme Court's ruling on the rights of soldiers in an operational theatre must inevitably prompt further ethical debate. The final twist here could eventually be that the 'gold standard' for protecting the right to life of British soldiers on the battlefield requires the constant overhead presence of a Reaper, or its future derivative, during particularly dangerous engagements with the enemy. The irony of such an eventuality for those who judge the Reaper or other armed RPAS to be somehow inherently evil is that this means of delivering air power has – when used within proper legal constraints and governance structures – the capacity to *protect human rights* by being more discriminating in its targeting, and proportional in its use of force – in other words, more ethical – than any previous aircraft in the RAF's inventory.

Conclusion

The advent of remotely piloted aircraft capable of delivering kinetic air power has contributed significant new dimensions to the political, operational and moral dimensions of war, highlighting the asymmetry between enemy capabilities in Afghanistan and elsewhere. If the addition of Reaper to the UK's military capability was viewed simply as an extension of the RAF's inventory its use would be considered neither problematic nor controversial, and moral assessments could be based on normative just war assumptions. However, no weapon system has prompted more debate, opposition and speculation – usually uninformed speculation – since the nuclear controversies of the 1980s. In addition, the issue of the rights of individuals, legally and morally, has advanced apace over the past two decades, in Europe at least. It has hopefully become clear in the course of this article that much more nuanced and probing analysis of the moral dimension of remotely piloted aircraft operations is needed, with the significance of individual rights-based moral arguments being paid particular attention. The UK Defence Secretary Philip Hammond voiced serious concerns about the impact of the legal application of the European Convention on Human Rights to military operations. A parallel shift in emphasis in the moral arguments surrounding war from state-centric to individually focused would have significant consequences for the moral component of fighting power as currently understood in the UK and by most of its Western allies – especially with the advent and use of remote technologies. The notion of morally justified collective action of the type currently undertaken by NATO partners in Afghanistan may be significantly or fatally undermined: a danger acknowledged by the Supreme Court. Military practitioners and scholars of military practice ignore societal developments at their peril. How many in

the military and academic communities, as little as 15 years ago, would have predicted that the European Convention on Human Rights would be successfully applied to British soldiers on a battlefield in Iraq? The survival of the just war tradition for almost two millennia (longer, depending on where you start it) has depended on its ability to adapt and remain relevant when making moral assessments about war in changing political, military, technological and cultural landscapes. Its relevance to war should no more be seen as definitive, fixed and timeless than the contributions of the longbow, gunpowder, the Spitfire or nuclear weapons. Similarly, the relevance of individual rights to just war theory would appear to be growing in significance and should be maintained as an object of ongoing ethical enquiry.

Notes

[1] Sallust (86BC - 34BC), *Jugurthine War*, 41BC, from **http://www.quotationspage.com**, accessed 7 July 2013.
[2] In this article, the term 'morality' refers to rules and codes that are broadly accepted, while 'ethics' is about individual choices and decision-making: often in relation to those codes.
[3] Supreme Court Judgement, 19 June 2013, 'Smith, Ellis, Allbutt and Others v The Ministry of Defence', [2013] UKSC 41, p. 21, para. 57, **http://www.supremecourt.gov.uk/decided-cases/docs/UKSC_2012_0249_Judgment.pdf**, accessed 26 June 2013.
[4] Ibid., p. 5. para. 13.
[5] Philip Hammond, 19 June 2013, **http://www.reuters.com/article/2013/06/19/us-britain-iraq-court-idUSBRE95I0QH20130619**, accessed 26 June 2013.
[6] Supreme Court Judgement, p. 24, para. 66.
[7] Ibid.
[8] Sensible debate about remote operations is bedevilled with terminological disputes and caveats. This article will refer to remotely piloted aircraft or remotely piloted aircraft systems because these terms accurately encapsulate the element of human agency involved in the delivery of lethal force from the air. The use of 'drone', and to a lesser extent 'unmanned aerial vehicle', is a frequent ploy in public discourse about Reaper operations, which obscures – either deliberately or accidentally – the high degree of human involvement in every part of the process.
[9] For an extensive defence of this statement see Peter Lee, *A Genealogy of the Ethical Subject in the Just War Tradition*, PhD Thesis, submitted to King's College London, 2010.
[10] This incident was recounted to me at length by one of the Royal Air Force crew members involved during a visit to Creech Air Force Base on 15 July 2013. The video and audio footage of the incident is now used in the training of new Reaper crews to highlight the importance of ethical decision-making and shared crew involvement in the decision-making process.
[11] Permission was obtained from all Reaper crew quoted directly or indirectly in this article. Further, before submission of this article to *Air Power Review* the personnel cited were given the opportunity to read the manuscript to ensure that no-one had been quoted inaccurately or out of context.
[12] David Whetham, 'Killer Drones: The Moral ups and Downs', *RUSI Journal*, Vol. 158, No. 3 (June/July 2013) pp. 22–32.

[13] *UK Air and Space Doctrine*, Joint Doctrine Publication 0-30 (Ministry of Defence), July 2013, pp. 2-8 – 2-9; and Joint Doctrine Note 2/11, *The UK Approach to Unnmanned Aircraft Systems*, Ministry of Defence Development, Concepts and Doctrine Centre (March 2011) p. 5-8ff.
[14] Louisa Brooke-Holland, 'Unmanned Aerial Vehicles (drones): An Introduction', Parliamentary Briefing Note (April 2013), http://www.parliament.uk/briefing-papers/SN06493, accessed 21 May 2013.
[15] Medea Benjamin, quoted in ibid., p. 14.
[16] Chris Cole, Mary Dobbing and Amy Hailwood, *Convenient Killing: Armed Drones and the 'Playstation' Mentality* (Fellowship of Reconciliation: Oxford, 2010) p. 4.
[17] Having spoken in numerous public debates and conferences on the themes of the ethics of remotely piloted aircraft and the ethos of those involved, the most common – and most illegitimate – form of argument against the use of remotely piloted aircraft involves a combination of the following unquestioned assumptions: 'drones are evil'; 'drones are autonomous'; contradicting the previous point, 'drone operators are deliberately dehumanized, unthinking killers'; 'our assertions must be true or governments would deny them' (do governments state where their nuclear submarines are lurking?). Such inanities belong in the activists' lexicon and not in academic debate, which is why I do not respond to them here.
[18] Personal communication by a UK Reaper pilot, 16 July 2013, Creech Air Force Base.
[19] Rwanda Genocide and the United Nations, http://www.un.org/en/preventgenocide/rwanda/education/rwandagenocide.shtml, accessed 12 July 2013.
[20] Alison J. Williams, 'Enabling persistent presence? Performing the embodied geopolitics of the Unmanned Aerial Vehicle assemblage', *Political Geography*, 30 (2011) p. 381, 387.
[21] Id.
[22] James Cook, 'Cyberation' and Just War Doctrine: A Response to Randall Dipert', *Journal of Military Ethics*, Vol. 9, No. 4 (2010) p. 420.
[23] For further related reading see: David Fisher, 'The Robotisation of War: An End to Military Virtues?' in Andrew Todd (Ed.) *Military Chaplaincy in Contention: Chaplains, Churches and the Morality of Conflict* (Farnham: Ashgate, 2013) pp. 83-92; David Whetham, 'Remote Killing and Drive-By Wars' in David W. Lovell and Igor Primoratz (Eds), *Protecting Civilians During Violent Conflict: Theoretical and Practical Issues for the 21st Century* (Farnham: Ashgate, 2012), pp. 199-214; Patrick Lin, 'Ethical Blowback from Emerging Technologies', *Journal of Military Ethics*, Vol. 9, No. 4 (2010) pp. 313-331; Peter W. Singer, 'The Ethics of Killer Applications: Why Is It So Hard To Talk About Morality When It Comes to New Military Technology?' *Journal of Military Ethics*, Vol. 9, No. 4 (2010) pp. 299-312.
[24] Nicholas Rengger, 'On the Just War Tradition in the Twenty–First Century', *International Affairs*, Vol. 78, No. 2 (2002) p. 355.
[25] Helpful introductions to their works include: James Turner Johnson, *Morality and Contemporary Warfare* (New Haven and London: Yale University Press, 1999); Jean Bethke Elshtain, *Just War Theory* (New York and London: New York University Press, 1992).
[26] Michael Walzer, *Just and Unjust Wars*, Third Edition (New York: Basic Books, 2000) p. 61.
[27] Jeff McMahan, 'The Sources and Status of Just War Principles', *Journal of Military Ethics*, Vol. 6, No. 2 (2007) p. 91.

[28] Walzer, 2000, p. 54.
[29] Id.
[30] Id.
[31] Lackey, 1982, p.536 (*my italics*).
[32] Brian Orend, 'Michael Walzer on Resorting to Force', *Canadian Journal of Political Science*, Vol. 33, No. 3 (Sep 2000) p. 528.
[33] The term 'ontological' may well be a more technically precise alternative to 'philosophical'.
[34] Were this paper to afford the luxury of further investigation of this point, the foundational assumptions of liberal democracy would probably be a good place to start exploring.
[35] Walzer, M., 'Philosophy and Democracy' in *Political Theory*, Vol.9, No.3 (Aug 1981) p. 397.
[36] Walzer, 2000, p.54.
[37] Michael Walzer, 'The Moral Standing of States: A Response to Four Critics', *Philosophy and Public Affairs*, Vol. 9, No. 3 (Spring 1980) p. 226.
[38] A philosophical approach that attributes the characteristics of an individual to a state. For example, equating an individual's right to self-defence to a state's right to self defence. A number of logical progressions can then be argued based on the initial assumptions.
[39] McMahan, J., 'The Sources and Status of Just War Principles', *Journal of Military Ethics*, Vol.6, No.2 (2007) p. 96.
[40] Id.
[41] Ibid., p. 97.
[42] Id.
[43] Walzer, 2000, p.44.
[44] Id.
[45] Ibid., p.45.
[46] Ibid., p.146.
[47] Jeff McMahan, 'Collectivist Defenses of the Moral Equality of Combatants', *Journal of Military Ethics*, Vol.6, No.1 (2007) p.51.
[48] Id.
[49] Jeff McMahan, 'Just Cause for War', *Ethics & International Affairs*, Volume 19, No. 3 (Fall 2005) p.6.
[50] Id.
[51] Walzer, 2000, p.146.
[52] Id.
[53] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977,Article 51 (5), **http://www.icrc.org/applic/ihl/ihl.nsf/Article.xsp?action=openDocument&documentId=4BEBD9920AE0AEAEC12563CD0051DC9E**, accessed 10 July 2013 (*My italics*).
[54] Utilitarianism is amoral philosophy that seeks the highest amount of good for the highest number of people.
[55] IED: 'improvised explosive device'. In Afghanistan this typically refers to roadside bombs that can be triggered either automatically like landmines, or in a controlled manner using wired or remote detonation.

[56] McMahan, 2007, p. 102 (*My italics*).
[57] Walzer, 2000, p.146.
[58] Jeff McMahan, 'Liability and Collective Identity: A Response to Walzer', *Philosophia*, Vol. 34 (2006) p. 13.
[59] Ibid., p. 15.
[60] This argument refers specifically to Afghan Taliban. The moral case for attacking Al Qaeda members in Afghanistan is more complex and there is not the scope here to explore the nuances fully.
[61] To be clear, I am referring here to a legally authorised target, supported by specific intelligence information, and correctly sanctioned within nationally defined rules of engagement.
[62] ISR: Intelligence, surveillance and reconnaissance.
[63] Personal communication by a UK Reaper pilot, 18 August 2013, based at Creech Air Force Base.
[64] Personal communication by a UK Sensor Operator, during a visit to Creech Air Force Base on 15 July 2013.
[65] Michael Walzer, 'Response to McMahan's Paper', *Philosophia*, Vol. 34, No.1 (2006) p.43.
[66] Philip Hammond, 19 June 2013, **http://www.reuters.com/article/2013/06/19/us-britain-iraq-court-idUSBRE95I0QH20130619**, accessed 26 June 2013.

Military Autonomous & Robotic Systems

Considerations for the way forward from a UK military perspective[1]

By Wing Commander Guy Edwards

Highly automated robotic systems (often referred to as 'autonomous' systems) will be a significant feature of the future battlespace, potentially leading to a revolution in military affairs. There are many who oppose their development and use on moral, ethical or legal grounds, but this Paper contends that none of the arguments against such systems are truly compelling, and, contrary to the views of most campaign groups, robotic systems are likely to bring many advantages at acceptable levels of risk. However, a clear vision is needed about how to engage with the subject. Failure to engage could result in severe military disadvantage, missed opportunities, weakened national robotics industries, and a marginalizing of nations' views on the ethical use and potential regulation of these systems.

Introduction

> *"The trend is clear: warfare will continue and autonomous robots will ultimately be deployed in its conduct."*[2]
>
> Professor Ronald C Arkin

What is autonomy?

The word 'autonomous' is widely misused and this misuse, far from simply raising semantic issues,[3] creates widespread misunderstanding and leads to public misconceptions and fears about developing capabilities.[4] The word 'autonomous' is derived from the Greek and means 'self-governing'.[5] From a philosophical perspective, Immanuel Kant described autonomy as the ability to impose moral law on oneself.[6] In either construct, an autonomous entity is one that sets its own rules, and this is the commonly understood meaning of the word. Therefore, any system, which is programmed by a human being, assigned a mission by an operator, or deployed on the order of a politician, can never correctly be described as 'autonomous'. In reality, most so-called autonomous systems are highly automated[7] (or 'intelligent'). An earlier attempt by the UK Military's Development, Concepts & Doctrine Centre (DCDC) to define autonomous systems fails to make this distinction[8] and both in US Department of Defense publications[9] and in some NATO documents[10], a variety of definitions of autonomy exist, all of which ignore the literal meaning of the word. Various attempts have also been made to define different levels of autonomy[11] , but almost all have subverted the meaning of the word itself. There are some notable exceptions, for example, the studies into levels of autonomy in robotic systems by Sheridan and Verplanck (1978) and Parasuraman, Sheridan and Wickens (2000), propose ten levels of automation in which the highest level (corresponding to full autonomy) offers the following definition: *'the computer decides everything and acts autonomously, ignoring the human.'*[12] Using this definition, it is impossible to imagine any armed forces wanting to create and use a truly autonomous system.

Autonomous Military Systems

From the forgoing paragraph, it can be deduced that no militaries would wish to develop truly autonomous systems simply because commanders would not want to field systems over which they have no control. Consequently, appropriate levels of control over robotic systems and the ability to direct them, will remain a central principle in the development and acquisition of such systems. Although the US Department of Defense arguably misuses the term 'autonomy', US policy is very clear that *'autonomous and semi-autonomous systems shall be designed to allow commanders and operators to exercise appropriate levels of human judgment over the use of force.'*[13] Similarly, the UK Ministry of Defence (MOD) *"…currently has no intention of developing systems that operate without human intervention."*[14] In short, even for highly-automated and intelligent systems, human oversight remains essential and will continue. This is a crucial deduction in terms of accountability, because if human commanders and operators continue to oversee the deployment and use of robotic systems, then they must surely bear some responsibility for the actions of that system. In light of such assurances of

continuing human oversight, the idea of 'killer robots'[15] running amok, seems entirely fanciful, but it undoubtedly helps to sell newspapers.[16]

Semi-Autonomous and Robotic Systems

Referring to highly automated or intelligent systems as *semi-autonomous* may provide a practical compromise in terminology and serve to reassure those for whom the prospect of robotic military systems is disturbing. Such systems could be described as exhibiting some independent decision-making capability (based on their environment, external stimuli and historical data, and derived from logic processing in accordance with set rules and algorithms). However, such semi-autonomous systems could also allow human intervention, and this could occur at any one of four stages in the system's action cycle (broadly similar to the classic OODA loop[17]), the most obvious case perhaps being the requirement for human authority prior to the use of lethal weapons once the semi-autonomous system had identified a target. While this approach is attractive, it may also be untenable in environments where very fast decision-making is required. It seems more likely that human oversight would be exercised in setting system parameters. Both at the design stage and subsequently, it is important for human operators to understand how a semi-autonomous system is using the information it gathers and thus judge whether intervention or 'manual over-ride' is necessary. Even with high levels of automation, appropriate levels of operator training and workload would be needed for proper oversight. Such oversight would include ensuring that the system is basing its actions on the correct data and that data is being used appropriately. Consequently, the design of cognitive processes for semi-autonomous systems should be comprehensible and preferably, recognizable to human overseers. Roboticist and roboethicist Professor Ronald Arkin of the Georgia Institute of Technology believes that in time, it would even be possible to provide robotic systems with a form of ethical conscience which he describes as an 'ethical governor'. Cognitive frameworks such as those described by Arkin[18] and Thoms[19] may provide the basis of designs for highly intelligent robotic systems. An earlier DCDC assessment opines that *"…unmanned aircraft will eventually have the ability to independently locate and attack mobile targets, with appropriate proportionality and discrimination, but probably not much before 2030."*[20]

Autonomy, Predictability, and Artificial Intelligence

One of the challenges in understanding robotic systems lies in identifying what is, and what is not, an autonomous system. If the literal meaning of autonomy is used, then the task is easy. However, because the term is often used to describe 'highly-automated' actions, there is considerable scope for misunderstanding. This is further complicated by the use of multi-agent systems[21] which interact with each other in order to solve complex problems, but in which the individual elements are likely to have independent functions, priorities or requirements. Although numerous competing definitions exist, in this context multi-agent systems are those systems that include multiple autonomous entities with either diverging information or diverging interests, or both.[22] Bringing these independent entities together in some form of reasoning process is broadly akin to forming a committee to solve a problem. Consequently, the output from a multi agent system may not be predictable and will depend upon design

parameters and constraints as well as the logic algorithms used and external stimuli. Such a system could sense its environment and act accordingly in pursuit of a pre-determined mission. In novel situations, the system is also likely to learn from the outcomes of its own actions – a form of artificial intelligence, albeit limited in what it is permitted to learn. Taken in isolation, the individual 'agents' within a system may be so limited in their function that they could not be considered 'autonomous'. However, combining agents (i.e. a multi agent system) may produce an intelligent system that could be considered semi-autonomous. There is no easily definable point at which this occurs and thus, currently, no straightforward legal delineation between autonomous, semi-autonomous and non-autonomous systems.

Why Robotic Systems would be useful

There are a number of reasons why robotic systems would have military utility.

Reduction of Risk to Personnel

In common with remotely operated systems, semi-autonomous platforms have the foremost advantage of not exposing human operators to dull, dirty or dangerous[23] tasks, or to put it another way, they *'allow their users to project power without projecting vulnerability'*.[24] However, the expense and effort in designing, building and operating semi-autonomous robotic systems should not be underestimated and there clearly has to be a tangible cost-benefit advantage in doing so over and above that of not exposing personnel to risk. Recently however, the UK Supreme Court ruled that the MOD has a duty to ensure that troops are properly prepared and equipped when sent to war.[25] Effectively the ruling upholds soldiers' right to life as described in the European Convention on Human Rights (even in war zones) and arguably places a legal responsibility on the MOD to mitigate risks to soldiers' lives by all feasible means. It could therefore be argued that, where possible, remotely operated or robotic systems should be used in preference to soldiers where a threat to life exists.

Reduced Vulnerability to Electronic Attack or Link Failure

As the reported hijacking of a US RQ-170 Sentinel remotely piloted aircraft in December 2011[26] illustrates, unmanned systems, which rely upon command links or external positioning systems (such as GPS), are inherently vulnerable to communications jamming and spoofing. Even in situations where an adversary is unable to attack command links, the vulnerability of satellite communications gives cause for concern as space weather or debris could cause the loss of critical satellites.[27] Semi-autonomous systems require little or no communications links and can be designed to navigate using only internal references. This mitigates the risk of a successful electronic attack or command link failure due to natural phenomena and thus improves the prospect of mission success.

Speed of Response

Remotely operated platforms incur reaction-time penalties which increase with the distance between operator and platform and whereas these penalties are currently within

acceptable boundaries, as more sophisticated, high speed, and semi-autonomous weapons system are encountered in the battlespace, the time delay due to remote operating is likely to generate unacceptable lag. For example, when defeating enemy missiles operating at supersonic speeds, an unmanned platform will need to react in milliseconds if it is to survive, rather than the 1-5 seconds delay commonly encountered in remotely operated air systems today.[28] Put simply, having a human control such 'survival' responses from a distance would be too slow. Furthermore, even if a command link is over a relatively short distance, the time taken for a human operator to assimilate and act upon inputs may cost precious seconds. Speed also confers improved system survivability due to the difficulty of engaging fast-moving targets: indeed, it is one of air power's core attributes.[29] As westernair forces strive to compensate for the reduction in mass resulting from budgetary constraints, agility and speed become vital in terms of creating momentum or 'velocity' with which to overwhelm adversaries.[30] In a physical sense, remotely piloted or semi-autonomous high speed air systems clearly offer some operational advantages over manned aircraft where high speed, high G manoeuvres challenge physiological boundaries for manned systems. Freed of the need to provide on-board life-support, unmanned platforms may also be smaller and therefore more agile than their manned counterparts.

Ability to Operate Outside of Communications Coverage

Unmanned systems provide a safer alternative than using manned platforms to carry out dull, dirty or dangerous work. In common with remotely operated systems, semi-autonomous platforms also offer the advantages of persistence, constant vigilance and endurance. But for missions or environments where communications links are difficult to maintain (such as underwater mine clearance, or subterranean search and clearance operations), then robotic systems, especially those incorporating multi-agent systems or some form of artificial intelligence, have the advantage of not requiring constant communications links with their operator. Remotely operated robots such as the PackBot[31] and Warrior[32] were used to carry out sampling and basic repair functions at the damaged Fukushima nuclear plant in Japan in areas where radiation levels would have been lethal to humans. However one of the main drawbacks of using them was that wireless control was often impossible due to radio signals being blocked by building structures or degraded by ionizing radiation, and tethering the systems (with fibre-optic control cables) was fraught with difficulties as cables easily snagged on objects and rubble.[33] Whereas the current capabilities of semi-autonomous systems fall well below that required to carry out complex tasks of the type encountered at Fukushima, this is clearly an area where such robotic systems would be of real benefit in the future.

Compliance

One view is that actions should be judged against compliance with regulations or laws rather than against outcomes.[34] As most current generation robots operate on rule-based logic systems they naturally favour such a deontological approach whereby the morality is founded upon the adherence to a rule or set of rules. However, this approach

contrasts to a *consequentialist* one in which *outcomes* rather than rules are all important. Both theories are imperfect: in human terms, it is possible to think of numerous examples where people have meant well and felt justified in ignoring regulations, but the unintended consequences of their actions were extremely negative. The opposite is also true where blind adherence to regulations has given rise to negative consequences, which in many cases, could not have been foreseen by the author of the regulations. In his science-fiction works, Isaac Asimov famously coined a number of *Laws of Robotics*, which in many ways epitomise the deontological approach. However, it is possible to conceive situations in which such 'laws' generate contradictions and could lead to unsafe actions. In short, whichever approach is taken and whether actors are human or robot, there will always be circumstances and decisions, which result in unintended consequences.

What is certain is that human adherence to laws and regulations has frequently failed under conditions of combat stress, extreme provocation or poor leadership. Arguably, pre-deployment training among western forces has greatly improved over recent years and an emphasis on rules of engagement and the Law of Armed Conflict has reduced the number of violations occurring as a result of ignorance. However, basic human nature is unchanged and there is still a high risk of even the best trained troops failing to meet the required behavioural standards.[35]

A 2006 report by the US Surgeon General's Office highlights the compliance challenges facing human beings on the battlefield and the underlying attitudes which give rise to such challenges.[36] Despite over 80% of the marines and soldiers questioned agreeing that they had received training on how to behave towards non-combatants, many had clearly not assimilated the training. The figures below illustrate the problem:

> 17% of soldiers and marines believe that all non-combatants should be treated as insurgents.
>
> 44% of marines and 41% of soldiers believed that torture should be allowed if it saved the life of a soldier or marine.
>
> Only 38% of marines and 47% of soldiers believed that all non-combatants should be treated with dignity and respect.
>
> Only 40% of marines and 55% of soldiers would report a unit member for injuring or killing an innocent non-combatant.

Robots do not suffer from emotional disturbance such as battlefield stress, prejudice or human motives such as revenge, nor are they susceptible to 'scenario fulfilment'.[37] Whilst they may not be perfect, they are highly unlikely to break rules and could also be capable of monitoring and reporting battlefield activity in such a way that would discourage illegal

acts by human combatants.[38] It would also be easier to conduct post-event analysis on a robotic system equipped with 'black-box' recorders. In short, the use of properly programmed robots could significantly reduce the number of breaches of the Laws of Armed Conflict and afford non-combatants greater protection than is currently the case.[39]

Advantages of Robots

Robots do not need sleep or extensive training and they can be designed to operate in extreme conditions: they do not get bored, become inattentive, or experiment with things out of boredom.[40] Their persistence and enduring level of focus on their assigned task easily outperforms human operators and, in a military context, would allow a high operational tempo[41] to be maintained. While robots still require downtime for repair and maintenance, their use may be many times more efficient than using manpower. For example, a simple 24-hour observation and reporting task that might otherwise require three people working in eight-hour shifts will require only one robot. Robots can certainly excel at dull and simple tasks, saving manpower and improving efficiency. But as robot capabilities improve, more complex tasks are also likely to be ceded to robots.

Opportunities

From the foregoing, it can be seen that robotic systems could offer significant advantages in certain military situations. It is worth noting however, that in many situations, robots are unlikely to supplant humans.[42] For example, robots are unlikely to be the best option for roles such as confidence-building, HUMINT,[43] mentoring, and high-level decision-making (especially in novel situations where existing models or metrics are inadequate, or where qualitative judgements are necessary). In much the same way as land, maritime and air forces work together in a highly synergistic way to create joint effects,[44] mixed teams of humans and robots may be the most effective way of harnessing the strengths of both whilst mitigating their respective weaknesses. Robotic systems, if used in a balanced and considered way, could considerably enhance operational effectiveness while improving protection for friendly forces and non-combatants. However, even if the West decided not to invest in the technology, others have understood the potential of such systems and are enthusiastically embracing it - as they have with remotely-operated systems.[45]

Objections to Robotic Systems

Some of the objections to robotic systems mirror those levelled against remotely operated systems (particularly unmanned air systems) but are nevertheless worthy of repetition here along with those that are specific to robotic systems. Many of those who wish to see the development of such systems banned, are perhaps guilty of measuring robotic abilities by what is available here and now, rather than looking to the future. As Arkin puts it: *By merely stating these systems cannot be created to perform properly and ethically does not make it true. If that were so, we would not have supersonic aircraft, space stations, submarines, self-driving cars and the like*.[46]

Legal Challenges

Whilst lethal robotic systems in particular raise significant ethical and legal issues, many of the arguments apply equally to more conventional systems, many of which, to a degree, outraged public conscience when they were first encountered.[47] The Martens Clause[48] is often cited as justification to ban emerging weapons systems stating that [even when no other constraining legislation exists] '*…the human person remains under the protection of the principles of humanity and the dictates of the public conscience*.'[49] Campaigners often suggest that robotic systems violate these principles, however, in practice there are numerous interpretations of the Clause and it is impossible to reach international consensus about *'the dictates of public conscience'*. Consequently, there have been no successful weapons bans under the provisions of the Clause. There is though, a clear danger that technological advances are outpacing regulation and legislation, and as a consequence, there are growing calls for the development of 'lethal autonomous robots' (LARS) to be halted until proper frameworks are in place.[50] Arguably, this is unrealistic considering the relative impotence of the UN and other supranational bodies to enforce a development moratorium, and the vested interests of powerful nations in developing such technologies given their potential military value.[51] However, states party to Additional Protocol 1 the Geneva Conventions (1949) are under obligation, through Article 36, to ensure that new weapons systems do not breach the provisions of the Protocol. *'In the study, development, acquisition or adoption of a new weapon, means or method of warfare,'* states must take steps *'…to limit superfluous injury or unnecessary suffering.'*[52] [53] Consequently, the UK and most other western democracies already review the development of all new weapons to ensure that they do not breach the Conventions.[54] As is so often the case with weapons though, it is *how* they are used, not their *de facto* existence which gives rise to concern.

One of the biggest potential barriers to the lawful use of lethal robotic systems is their current inability to comply with the core principles of *jus in bello* that underpin the Laws of Armed Conflict. The principles are: proportionality, distinction, military necessity, and humanity.

Proportionality

The principle of proportionality imposes a duty not to proceed with an attack which may *'…cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.'*[55] Compliance with the Protocol clearly requires a number of value judgements to be made (e.g. is the expected loss of life excessive? What is the military value of the target? Are there alternative targets, which might produce the same military outcome? etc). These value-based problems are extremely difficult to solve using algorithms alone.[56] However, by seeking to codify such values for use in robotic weapon systems, programmers and lawyers together may evolve a set of objective criteria, which more accurately follows the provisions of international law than is currently the case and which may even be more restrictive.

However, the current Protocol may prove inadequate for regulating lethal robotic systems and a less subjective legal framework may be required.[57] 1977 (when the current Protocol was signed) was, coincidentally, the same year that the first home computers were introduced, and despite exponential developments in computing which have changed the conduct of war, the Protocol has not been revised.

Distinction

The Protocol[58] also provides for the protection of civilians and civilian objects and, as with *proportionality*, the challenges of designing robotic systems capable of discriminating between combatants and non-combatants is immense, but arguably, not impossible.[59] Some commentators make the mistake of assuming that because the *current* generation of robots cannot discriminate between combatants and non-combatants, that they will never be able to do so.[60] Surely though, it is morally wrong to dismiss the potential behavioural improvements that robotic systems could deliver? In combat, human soldiers have to make split-second decisions about whether someone is a combatant or not, something which is made doubly difficult when dealing with insurgents and irregular forces who do not wear uniforms. Ultimately, soldiers have the right to protect themselves and may elect to shoot first when in doubt. For example, a guard might reasonably shoot an approaching person who fails to stop when challenged, provided the guard has reason to believe the person is a suicide bomber concealing explosives and presenting an imminent and direct threat to life.[61] In the heat of battle, a soldier's self-preservation instinct may pre-dispose him to 'shoot-first, ask questions later' if delaying an engagement by a fraction of a second could mean the difference between his life or death. In the 'fog and friction of war', some incorrect decisions by human soldiers are thus inevitable.[62] Robotic systems however, do not face the same dilemma and can take more considered decisions even if, on occasions, this results in their destruction. Most people would agree that the occasional sacrifice of a robotic system is preferable to the death of an innocent civilian. Furthermore, robots have the potential to work in teams with human soldiers, and can be used to determine the intent of unknown actors before situations reach the critical point at which a defensive response is triggered. Finally, even if a robotic weapon system were unable to distinguish between combatants and non-combatants, there would still be circumstances under which it could be lawfully used. *'Not all battlespaces contain civilians or civilian objects. When they do not, a system devoid of an ability to distinguish protected persons and objects from lawful military targets can be used without endangering the former. Typical examples would include the employment of such systems for an attack on a tank formation in a remote area of the desert or on warships in areas of the high seas far from maritime navigation routes'*.[63]

Military Necessity & Humanity

The principle of 'military necessity' provides for the legal use of force to achieve the legitimate purpose of a conflict *with the minimum expenditure of life and resources*.[64]

This is also linked to the principle of 'humanity', which directs the avoidance of *superfluous injury or unnecessary suffering* and the protection of those rendered *hors de combat* such as the wounded or sick.[65] With human soldiers and, arguably even more so for robotic systems, it is often difficult to determine if an adversary is *hors de combat*. There is no hard and fast test and, as history shows us, some soldiers, though badly injured, carry on fighting[66] whereas others with lesser wounds cease fighting. This presents a difficult decision as to whether an injured combatant should be engaged or spared. The answer may lie in technology that both identifies weapons and allows robotic systems to take a 'clean-shot' at the weapon rather than at the person holding it. In future, robotic systems equipped with suitable sensors and having access to weapon databases could feasibly resolve this problem more effectively than their human counterparts. The idea is not new and provides a possible solution to the challenges of the Protocol.[67] [68]

Lack of Accountability

In international humanitarian law, a longstanding interpretation of the *jus in bello* principle includes the idea that someone can always be held responsible for deaths that occur during war. Some lawyers and others (such as philosopher Dr Robert Sparrow) contend that if autonomous systems commit war crimes, no single person or *moral agent* can be held responsible and therefore, the deployment of such systems would be unethical.[69] In considering where responsibility might lie, a number of options are apparent. Responsibility could lie with the robot itself (if it were considered a *moral agent*) but currently, no robots are even close to attaining the sort of Kantian moral agency that would warrant their being considered as wholly responsible for their actions - although some ethicists have argued that, in time, robots will become moral agents.[70] The very term used by Christof Heyns' report (lethal autonomous robots) is problematic. *There is no doubt that machines can deliver lethal force, but in this context autonomy is a relative term. People programme machines and choose how much autonomy to give them*.[71] Therefore, the programmer or designer of the robot could plausibly be held to account for the robot's actions if illegal actions were the result of malfunctioning software or poorly tested algorithms. That said, it seems unlikely that states acquiring and using such systems could be absolved of all responsibility for validating claims about the system's performance. However, given that most programmers work in teams (and that they do so under the auspices of a commercial enterprise), it may be more appropriate to consider such responsibility as a vicarious liability (a principle already extant in law[72]). Governments (rather than individuals) have also been held responsible for 'rogue' weapons systems.[73] However, in common with many other weapon systems, it is often the way in which the weapon is used that determines whether or not it complies with the laws of armed conflict. The decision to deploy a robotic system for a particular mission rests with the military commander and ultimately, therefore, he must share at least some of the accountability for the actions of the robot. It is a weapon system like any other and the commander deploying it must be aware of its limitations,

capabilities, and vulnerabilities and use it accordingly. It has been argued that the commander may not have sufficient technical knowledge to make an informed decision about the reliability of the robot, or may not understand the processes by which the robot makes critical decisions, and thus should not be held responsible. However, examples abound of where commanders do not possess specialist knowledge but instead rely on advisors (for example, on operations, senior UK military commanders are provided with specialist legal advisors[74]) and therefore, if provided with the appropriate specialist advice, there is no reason why the commander should not be held responsible.[75] Prof. Ronald Arkin has hinted at such an arrangement.[76]

The Moral Argument

There is a fundamental moral argument that, no matter how compliant a robotic system is with the various human rights legislation and laws of armed conflict, the sanctity of life is such that robots should never be allowed to take human life. By definition, they lack *humanity*, understanding and compassion, and it is argued that their use in conflict would further dehumanize the grisly business of warfare. As Peter Asaro puts it: *'As a matter of the preservation of human morality, dignity, justice, and law we cannot accept an automated system making the decision to take a human life…When it comes to killing, each instance is deserving of human attention and consideration in light of the moral weight inherent in the active taking of a human life.'*[77] This moral repugnance for lethal robots may be a product of our own self-image as the unassailable prime species and, whilst it is understandable, it is a philosophical point over which there is considerable debate. On the one hand, if robotic systems were so advanced as to possess moral agency, then there is no reason why their decisions should be any less valid (or less moral) than those of a human soldier. Conversely, if they do not possess moral agency, and their actions are devoid of *mens rea*,[78] it is their human facilitators who must remain fully accountable for the way in which they are used (in just the same way as any other weapon system).

Loss of Warrior Ethos

With the advent of remotely operated systems (and, by extension, robotic systems) has come a renewed concern over the loss of warrior ethos and the implications this has for humanity in conflict. Combat in which one party is not risking their life is seen in many cultures as cowardly or lacking in gallantry and, throughout history, there are examples of new weapon systems being introduced, which were deemed unfair, or underhand but which subsequently gained acceptance in warfare (e.g. longbows, artillery, submarines, and aeroplanes). However, modern war is not like a medieval pageant where chivalrous behaviour defines the contest.[79] It is a bloody, and visceral experience and has been characterized thus, *"…remember that no bastard ever won a war by dying for his country. He won it by making the other poor, dumb bastard die for his country"*[80] Indeed, the principle of avoiding direct engagement with an adversary's strength is ages old: '*…in war, the way is to avoid what is strong and strike at what is weak.*'[81]

The warrior ethos is redefined with each generation and while notions of honour, loyalty, integrity, self-sacrifice and courage are still valued and present in modern war fighters, the opportunities to demonstrate them on the battlefield are no longer available to every combatant. Arguably all protagonists who fire long-range or stand-off weapons could be accused of using distance to reduce their exposure to the enemy: this can include artillerymen, submariners and aircrew. Even those who emplace remotely operated improvised explosive devices understand and use the relative safety of distancing themselves from the enemy and eschewing close-quarter combat.

Playstation Mentality

'Playstation' mentality has been conjectured as an effect whereby *'…the geographical and psychological distance between the drone operator and the target lowers the threshold in regard to launching an attack and makes it more likely that weapons will be launched. Operators, rather than seeing human beings, perceive mere blips on a screen*.[82] There is something profoundly distasteful about the thought that taking human life could be compared to computer gaming and, if it were true, it would indeed be cause for concern.[83] However, the decision to launch a weapon is not a personal choice but a calculated decision based on strict Rules of Engagement, which are formulated in such a way as to take full account of the Laws of Armed Conflict. Unfortunately, in common with nearly every other combat situation, examples can be found when rules have been broken (for example, the attack by a Kiowa helicopter, cued by USAF Predator operators, in February 2010 that killed 23 Afghan civilians).[84] The Predator operators were subsequently disciplined for their *"inaccurate and unprofessional"* reporting in what may have been another case of scenario fulfilment.[85] Clearly, the way in which remotely piloted systems are operated does bear some resemblance to the interfaces used for playing console games. Indeed, Predator operators themselves sometimes draw such comparisons, but this does not mean that they approach their business with a gaming mentality.[86] Such an interpretation of their comments is wilfully mischievous. In an interview with *Spiegel International*, P W Singer[87] also dismisses the idea as nonsense: *'In the beginning we feared that drones may make the operators not really care about what they're doing. But the opposite has turned out to be true. They may almost care too much… Traditional bomber pilots don't see their targets. A remote operator sees the target up close; he sees what happens to it during the explosion and the aftermath. You're further away physically but you see more.'*[88] Furthermore, 'drone' operators frequently observe their target area for protracted periods to the extent of recognizing individuals, seeing their families, and understanding the local pattern of life. Talking about a 'Playstation' mentality may be good for sound-bites, but it is little more than propaganda.

Lowering the Conflict Threshold

The justifications for using lethal force are summarized by *Jus ad bellum* criteria,[89] which limit the lawful use of force to situations of last resort. Regardless of the advent of remotely operated and robotic systems, the use of force remains an option of last resort,

the judgement of which rests (in a democracy such as the UK) with elected leaders and not the military. However, more pragmatic considerations have also restrained potential belligerents: national leaders know that armed conflict generally has a heavy cost in terms of life and treasure and may find the consequent political fall-out of conflict unpalatable. Remotely operated or robotic systems mitigate the direct risk[90] and might thus remove one of the perceived costs of resorting to armed conflict. This raises a serious question: *'Is the very possession of the technology leading to decisions to kill in situations where, without it, a non-lethal approach would be taken?'*[91] If we acknowledge that such systems may affect the political decision-making calculus for entering conflict, notwithstanding the provisions of the UN Charter, then it is *'important that the correct policy measures are put in place to avoid this eventuality'.*[92] However, this may be an over-simplistic view, as Alexander Leveringhaus points out: *'…technology in and of itself may enhance military capacities of states. But it is not the only element which decides whether states go to war'.*[93] Ultimately, the decision to resort to force may also depend on the likelihood of retaliation, but where there is an absence of any realistic adversary counter-attack capability, it must be acknowledged that remotely operated and robotic systems do offer the *possibility* of lowering the conflict threshold. The availability of such technology to non-state actors and the possibility of using it anonymously is also likely to lower the conflict threshold.

Accuracy

With respect to remotely operated systems, campaigners often cite a lack of accuracy as a concern, linking it to unnecessary civilian casualties. While many have tried to use the same argument to prevent the development and deployment of robotic or highly automated systems, the underlying premise is fundamentally flawed. Remotely operated and robotic systems are not inherently inaccurate. In common with manned systems, their accuracy is derived from the quality of their onboard sensors, aiming systems, stability, and associated weapons. For example, a Hellfire (AGM-114) missile is no less accurate when fired from a Reaper (remotely piloted aircraft) than it is when fired from an Apache AH-64 (manned) attack helicopter. Arguably, automated or robotic systems may even be more stable during firing due to the removal of imprecise or sudden piloting movements, and might therefore result in better accuracy. Weapons released from remotely-operated systems have undoubtedly caused civilian casualties, but this is often due to poor availability of weapons with small, limited-blast warheads, or a result of Rules of Engagement (and considerations of military necessity) which result in collateral damage[94] being deemed acceptable under the circumstances. This is a value judgement, which is no easier to make whether the system is manned or unmanned, robotic or human. The improved persistence of remotely operated systems (and, in future, robotic systems) and the fact that operators are not in direct danger may afford more time and better support for careful target selection. The result would be greater *tactical patience*[95] than would be possible with a manned platform which may have just fleeting opportunities to attack due to lower endurance and greater risk to the operator if loitering.

> In short, given the right level of investment in sensors and aiming systems, proper design, supporting personnel and the availability of suitable weapons, there is every reason to believe that robotic and highly-automated systems will offer greater accuracy than is currently the case.[96]

Irrational Concerns versus Logical Argument

In short, none of the objections raised provide compelling reasons to abandon or forego the development and eventual use of robotic military systems. Indeed, there seems to be much to commend the responsible development of such systems particularly where their performance exceeds human performance: their use may even improve the lot of non-combatants in conflict and reduce violations of international humanitarian law by combatants. At very least, we should not allow emotive arguments to set the narrative.

Conclusions

Whether we like it or not, highly-automated robotic systems offer militaries many advantages and will inevitably play a major role in future conflicts: they will potentially spark a revolution in military affairs capable of changing forever the face of conflict and the dynamics of military power. An *historic revolution in military affairs is at hand*[97] and those who fail to keep pace are likely to pay a heavy price.

Failure to remain fully engaged with the development of robotic systems would amount to an abdication of responsibility, in commercial, military and ethical terms. Such systems will, without doubt, be increasingly employed in both the civilian and military sectors and may well represent an area of future growth to rival the personal computing or mobile communications booms. Developed nations cannot afford to be left behind. From a military perspective, sitting on the fence while others develop such systems may appear an attractive or even financially prudent option, but such a decision needs to be taken consciously, acknowledging that our ability to influence the ethical and legal constraints on system design or even the logic processes of systems we may wish to buy 'off-the-shelf' at a later date, would be severely limited. Even amongst allies, there are subtle variations in ethical and legal interpretations, which have the potential to drive robotic system development down completely different routes. Furthermore, there should be no doubt, that at some point in the future, there will be a need to counter such systems when they are deployed by adversaries. Arguably, it is even possible (but unlikely) that state-sponsored acts of terrorism could use robotic systems as a means of avoiding attribution.

European Governments in particular[98] could face moral and legal challenges if they knowingly, and without good cause, imperil the lives of their servicemen and women on operations when effective robotic alternatives exist. Arguably, sending human operators to carry out highly dangerous tasks (which could be performed by a robotic system) unnecessarily jeopardizes the operators' lives and may contravene his or her 'right to life' as outlined in European Human Rights legislation. The vanguard of such moral and legal challenges is likely to come sooner

rather than later, particularly in specialist areas such as contamination control and bomb disposal - in both military and civilian operations.

As with remotely piloted systems, there is a real danger that any failure to engage in the debate allows others to set the narrative. This has the clear potential to result in constraints on future use of robotic systems based on fear and prejudice rather than fact. There is also a need for consistency in the use of terminology. Unless we really mean 'autonomous' (as per the English language definition), then we should avoid using the term. If we really mean 'intelligent systems' or 'highly-automated systems', then we should say so.

Existing international protocols were largely designed and written prior to the computing revolution and now appear inadequate in the face of emerging technologies. Governments should consider whether they have an international role to play in leading the development of new protocols or, at very least, being actively involved in the debate.

Robotic systems by design are neither inherently disproportionate nor inherently indiscriminate and there is no legal case for banning them. In common with almost every other weapon system, it is *how* they are used that dictates whether or not their use is legal. Therefore, acknowledging that such systems do possess some novel capabilities, it seems imperative that appropriate additional regulation on *how* they are used should be considered as a matter of urgency, with like-minded states initiating consultations with a view to developing a critical mass of reasoned opinion. Given the evolutionary nature of robotic systems, it may be difficult to define the point at which new regulation becomes obviously necessary. Therefore such regulations need to be in place *before* they are demonstrably required.

Remotely-operated or robotic systems may lower the threshold at which political leaders consider using force. Notwithstanding the underlying *jus ad bellum* imperative that force should only be as a last resort, it may be wise to consider what additional checks and balances could be created to safeguard against such temptations.

At a practical level, semi-autonomous systems already exist and are in service. The boundary between 'fully autonomous' systems and those that are highly automated or intelligent multi-agent systems is becoming increasingly difficult to determine with certainty and there is no clear delineation either in practice or in law. However, within the next decade, commanders will increasingly face situations where they have to decide on the deployment of such systems: at present, they must do so without the benefit of specialist advice. A study should be commissioned now, to determine how this specialist advice would be provided to commanders in the future.

Notes

[1] The views expressed are those of the author, Wing Commander Guy Edwards (UK Ministry of Defence Development, Concepts and Doctrine Centre) and do not necessarily represent

formal UK policy or even a consensus view within the UK MOD. Paper dated 7 September 2013.

[2] Professor Ronald C Arkin: *The Case for Ethical Autonomy in Unmanned Systems*. Georgia Institute of Technology 2010.

[3] *'The distinction between autonomous and automated is important as there are moral, ethical and legal implications regarding the use of autonomous unmanned aircraft'.* UK Joint Doctrine Note 2/11 *The UK Approach to Unmanned Aircraft Systems*. 2011. Page 2-4 para 206c.

[4] For example, see *'Losing Humanity: The Case Against Killer Robots'.* Published by the Human Rights Program, Harvard Law School, 2012.

[5] ***Autonomy*** *n.* ***1****. The possession or right of self government.* ***2****. freedom of action.* ***autonomously*** *having its own laws [from Greek autos 'self' + nomos 'law]'.* Concise Oxford English Dictionary (12th Edition).

[6] Immanuel Kant - Grundlegung zur Metaphysik der Sitten, 1785 (Groundwork of the Metaphysics of Morals).

[7] ***Automatic*** *adj.* ***1*** *(of a device or its function) working by itself with little or no direct human control.* Concise Oxford English Dictionary (12th Edition).

[8] *'An autonomous system is capable of understanding higher level intent and direction. From this understanding and its perception of its environment, such a system is able to take appropriate action to bring about a desired state. It is capable of deciding a course of action from a number of alternatives, without depending on human oversight and control, although these may still be present. Although the overall activity of an autonomous unmanned aircraft will be predictable, individual actions may not be.'* Joint Doctrine Note 2/11 – The UK Approach to Unmanned Air Systems. United Kingdom Ministry of Defence, 2011. p2-3.

[9] For example, the OSD Unmanned Systems Integrated Roadmap FY2011/2036.

[10] For example, the NATO Industrial Advisory Group, Study Group 75, Annex C – Autonomous Operations, 2004 which focuses on the ability of an 'autonomous system' to be 'goal-directed'.

[11] The Autonomy Levels for Unmanned Systems (ALFUS) Framework describes autonomy in terms of the human operator's ability to interact with unmanned systems to perform the **operator assigned** missions. The following modes of operation are defined: fully autonomous, semi-autonomous, teleoperation, and remote control, fully autonomous being '*a mode of operation of an UMS wherein the UMS is expected to accomplish its mission, within a defined scope, without human intervention*. [Compare with OED definition of 'automatic', above.]

[12] For a comparison of the two studies see Robert M Taylor: *Capability, Cognition and Autonomy*. HMSO 2002. p15.

[13] US Department of Defense Directive No.3000.09 *'Autonomy in Weapon Systems'* dated 21 Nov 2012. Para 4.

[14] Lord Astor (The Parliamentary Under-Secretary of State, Ministry of Defence) in a response to a question from Lord Harris of Haringey in the House of Lords on 26 March 2013. He went on to say *"…let us be absolutely clear that the operation of weapons systems will always, always, be under human control."* Reported in the Hansard (Column 955), 26 March 2013. However, it is not clear however whether 'human control' includes the setting of engagement parameters for automated systems.

[15] "Killer Robots" is the pejorative term used by activists who oppose the development of

'autonomous' military systems. The term is widely used to sensationalize autonomous military systems and has gained a degree of traction in the mainstream press.

[16] For example *'Killer Robots Must Be Stopped'* - a headline from *The Observer* on 23 February 2013 (which also carried a photograph of a killer robot from the science fiction film *Terminator 3: Rise of the Robots*. The group behind the headline was the UK-based *Campaign to Stop Killer Robots* (see **www.stopkillerrobots.org**).

[17] The OODA loop: *Observe, Orient, Decide, Act* as described by USAF Colonel John Boyd.

[18] Ronald C Arkin: *Governing Lethal Behaviour: Embedding Ethics in a Hybrid Deliberative/Reactive Robot Architecture.* Georgia Institute of Technology, 2011.

[19] Joanne Thoms: *Understanding the Impact of Machine Technologies on Human Team Cognition*. 2009.

[20] UK Joint Doctrine Note 2/11 *"The UK Approach to Unmanned Aircraft Systems"* p3-6. MOD 2011.

[21] A multi-agent system (MAS) is a computerized system composed of multiple interacting intelligent agents within an environment. Multi-agent systems can be used to solve problems that are difficult or impossible for an individual agent or a monolithic system to solve. (**http://en.wikipedia.org/wiki/Multi-agent_system** (accessed 3 Jun 13).

[22] Shoam & Leyton Brown *"Multi Agent Systems: Algorithmic, Game-Theoretic, and Logical Foundations.* Stanford University & University of British Columbia. 2009.

[23] The MOD's JDN 2/11 pages 3-4 to 3-6 describes dull, dirty, dangerous and deep missions.

[24] Lt Gen David A Deptula USAF (Retd): *Remotely Operated Air Power: Implications for Ethics, Policy and Strategy*. (An Air Power Australia Essay on Military Ethics and Culture). April 2013

[25] *The Supreme Court of the United Kingdom* – Press Summary dated 19 June 2013. (Accessed online at **www.supremecourt.gov.uk/decided-cases** on 16 Jul 2013).

[26] In an exclusive interview with the *Christian Science Monitor* an Iranian Engineer is reported to have claimed that the Sentinel's command links were jammed and then spoof GPS signals fed to the UAV as it reverted to its lost-link recovery routine, tricking the aircraft into landing in Iran. (Christian Science Monitor 15 December 2011 accessed at **http://www.csmonitor.com/World/Middle-East/2011/1215/Exclusive-Iran-hijacked-US-drone-says-Iranian-engineer-Video** on 1 June 2013).

[27] See *The UK Military Space Primer*. DCDC, MOD UK.2010. Chapter 1.

[28] On 5 June 2013, the USMC lost one of its two KMax Remotely Piloted helicopters in Afghanistan in part due to system latency which hindered the response to an underslung load oscillation.

[29] Joint Doctrine Publication (JDP) 0-30: UK Air and Space Doctrine. UK MOD July 2013. Para 106.

[30] Air Cdre P Teakle: *A Step in the Right Direction – The Concept of Military Momentum*. The Journal of the Joint Air Power Competence Centre, Edition 17 (Spring/Summer 2013). Page 58.

[31] See **http://www.irobot.com/us/learn/defense/packbot.aspx**.

[32] See **http://www.irobot.com/en/us/learn/defense/warrior.aspx**.

[33] Eric Guizzo *Fukushima Robot Operator Tell-All Blog* dated 23 Aug 2011. **http://spectrum.ieee.org/automaton/robotics/industrial-robots/fukushima-robot-operator-diaries** accessed 2 Jun 13. The website contains translated excerpts from a blog written by one of the robot operators

at Fukushima and highlights the advantages and challenges of working with robots.

[34] Kant, Immanuel. *Groundwork of the Metaphysic of Morals: Transition from the Common Rational Knowledge of Morals to the Philosophical*. 1785.

[35] For example; The Canadian Airborne Regiment's mistreatment and murder of Somalis during a UN peacekeeping Mission in 1993; the US military's abuse of Iraqis in Abu Ghraib prison during 2003 and 2004 and UK military abuses in Iraq over the same period.

[36] US Mental Health Advisory Team (MHAT) IV. *Operation Iraqi Freedom 05-07 – Final Report. Office of the Surgeon General, United States Army Medical Command*, 17 November 2006.

[37] 'Scenario fulfilment' was a term used by the US Government to describe a psychological response by the crew of the US Navy guided missile cruiser *USS Vincennes* during the shoot-down of an Iranian civilian airliner in July 1988. In a written answer provided to the BBC documentary, *The Other Lockerbie* (screened in 2000), it was postulated that because some of the airliner's flight parameters matched those of possible attack profiles (for which the crew had extensively practiced), they believed the *Vincennes* was under attack and ignored sensory information which contradicted their understanding of the scenario.

[38] See Arkin, Ronald C. *Governing Lethal Behaviour: Embedding Ethics in a Hybrid Deliberative/ Reactive Robot Architecture*. Georgia Institute of Technology, 2011. Page 7.

[39] *'In the not too distant future, relatively autonomous robots may be capable of conducting warfare in a way that matches or exceeds the traditional jus in bello morality of a human soldier.' Lin et al: Autonomous Military Robotics: Risk, Ethics, and Design*. California Polytechnic State University, 2008. p54, 4.7.

[40] There are numerous reported cases of operators conducting unauthorised experiments with systems out of boredom. For example, in 1973 in Albuquerque, a National Airlines DC10 crew experimented with the aircraft's auto-throttle system in such a way that caused an engine to over-speed. The resulting engine disintegration ripped a hole in the fuselage causing an explosive decompression in the cabin which sucked a passenger out of the plane.

[41] *Operational tempo* is the term used to describe the pace and frequency of military operations and may be considered similar to 'momentum'. In most military operations there is also a requirement for an 'operational pause' during which forces are reconstituted, re-armed, refuelled, repaired and rested ready for the next phase of the operation.

[42] See Leveringhaus, Alexander. *Much Ado About Killer Robots*. e-International Relations, 4 June 2013. *('Three Fallacies in the Killer Robots Debate: [No.1] The Military will use Killer Robots in every context and for every conceivable task').* http://www.e-ir.info/2013/06/04/much-ado-about-killer-robots accessed 7 July 2013.

[43] Joint Doctrine Publication 2-00 *Understanding and Intelligence Support to Joint Operations (Third Edition) describes* HUMINT (human intelligence) as *'a category of intelligence derived from information provided by, or collected on, human sources and individuals of intelligence interest, as well as systematic and controlled exploitation, by interaction with, or surveillance of, those sources or individuals.'*

[44] The UK MOD's Joint Doctrine Publication 3-00 *Campaign Execution* (Third Edition, Change 1) describes how the unique capabilities of the 3 environmental services are combined in order to achieve the greatest effect possible.

[45] *Growth in UAV manufacturing and procurement is not limited to the West. China's commitment to unmanned systems in terms of volume is larger even than the United States. The demand for industrial robots is estimated to hit 32,000 units by 2014, making it the world's largest consumer of robotics technology. China has ramped up unmanned systems development faster than any other nation and threatens to surpass the West in technology and capability*. Parsons, D. *Worldwide, Drones are in High Demand.* National Defense Archive. May 2013.
[46] Arkin, R. *Lethal Autonomous Systems and the Plight of the Non-combatant*. 2013. Page 6. http://www.cc.gatech.edu/ai/robot-lab/publications.html accessed 13 Jul 13.
[47] The Second Lateran Council (1123) under Pope Innocent II is often quoted as outlawing the use of crossbows (against Christians) although the actual wording is somewhat vague: *'Slingers and archers directing their art against Christians, are anathematized.'* Ten Ecumenical Council, Lateran II. Canon 29.
[48] The Martens Clause was a preamble to the 1899 *Hague Convention on the Laws and Customs of War on Land* that sought to endow protection on life even where specific cases were not covered by the articles of the Convention itself. However, it is widely accepted in legal literature that the Clause does not constitute a legal criterion in its own right against which the lawfulness of new weapons or methods can be judged.
[49] Modified wording used in the Hague Convention of 1907.
[50] *'The Human Rights Council should call on all States to declare and implement national moratoria on at least the testing, production, assembly, transfer, acquisition, deployment and use of LARs until such time as an internationally agreed upon framework on the future of LARs has been established.'* UN General Assembly: Report of the Special Rapporteur on extrajudicial, summary or arbitrary executions, Christof Heyns. 9 April 2013. Recommendations, para 113.
[51] *'The moratorium Christof Heyns called for is likely to be dead on arrival if it ever gets to the UN Security Council - some veto-wielding nations have no intention of backing away from intelligent-machine warfare.'* Arquilla, J: *Could Killer Robots Bring World Peace?* National Security, 19 June 2013. http://www.foreignpolicy.com accessed 1 July 2013.
[52] *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of international Armed Conflicts (Protocol 1), 8 June 1977. Article 36 – New Weapons.* http://www.icrc.org/eng/war-and-law/index.jsp accessed 10 July 2013.
[53] Additional Protocol 1 Article 35(2) also states that *"It is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering."*
[54] For UK weapons designed for use in international armed conflict, Article 36 clearance is the responsibility of the MOD's Developments, Concepts & Doctrine Centre. (See Defence Instructions & Notices: 2013DIN04-015 (Released February 2013).
[55] Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977. Article 57 (Precautions in Attack).
[56] *'Although they have not yet been developed, "military advantage" algorithms could theoretically be programmed into autonomous weapon systems. For example, the systems could be pre-programmed with unacceptable collateral damage thresholds for particular target sets or situations.'*

Schmitt & Thurnher: *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict.* Harvard national Security Journal, Volume 4.2013. Page 256.

[57] In Christof Heyn's report to the UN *(idem)* he makes a similar recommendation: The UN should convene a High Level Panel whose tasks would include an *'…assessment of the adequacy or shortcomings of existing international and domestic legal frameworks governing LARs.'* [Lethal Autonomous Robots] Recommendations A. 114(d).

[58] *Idem.* Protocol - Articles 51, 52 and 57 refer.

[59] See Arkin, Ronald C. *Governing Lethal Behaviour: Embedding Ethics in a Hybrid Deliberative/ Reactive Robot Architecture.* Georgia Institute of Technology, 2011.

[60] Sharkey, Prof. Noel E. *The evitability of autonomous robot warfare.* International Review of the Red Cross, 94 pp 787-799.

[61] For example, the high-profile case of the SAS shooting members of an IRA active service unit in Gibraltar in 1988 was justified as lawful killing on these grounds. *'McCann's [one of the IRA Members] hand moved suddenly and aggressively across the front of his body. Soldier A thought that he was going for the button to detonate the bomb and opened fire.'* UK Law Commission Report Transcript – 4 March 1994.

[62] *'Armed conflict, of any type, is a bloody, chaotic and destructive business. The inherent chaos of war fighting introduces friction, exacerbated when (almost inevitably) initial plans are overtaken by events…'* UK MOD: British Defence Doctrine (4th Edition). Para 526.

[63] Schmitt & Thurnher: *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict.* Harvard National Security Journal, Volume 4.2013. Page 231.

[64] Described more fully in UK MOD *Joint Doctrine Publication 3-46* (Second Edition). *Legal Support to Joint Operations*. 2010. Page 1-12.

[65] Id. Protocol Articles 35(2), 41 and 45 (especially Article 41(2) which states that: *"a person is 'hors de combat' if: (a) he is in the power of an adverse Party; (b) he clearly expresses an intention to surrender; or 9c) he has been rendered unconscious or is otherwise incapacitated by wounds or sickness, and therefore is incapable of defending himself; providing that in any of these cases he abstains from any hostile act and does not attempt to escape."*

[66] For example, Pte Johnson Beharry VC. *'…a rocket-propelled grenade detonated on the vehicle's frontal armour, just six inches from Beharry's head, resulting in a serious head injury. Other rockets struck the turret and sides of the vehicle, incapacitating his commander and injuring several of the crew. With the blood from his head injury obscuring his vision, Beharry managed to continue to control his vehicle, and forcefully reversed the Warrior out of the ambush area…'* Excerpt from citation in London Gazette, 17 March 2005. Supplement No.1.

[67] 'The same principles that power facial recognition software could apply to robots targeting their weapons at other weapons, so they fire to disable guns and not to kill people.' Atherton, K. *UN Expert Worries about Killer Robots.* POPSCI 31 May 2103. **www.popsci.com** accessed 14 July 2013.

[68] See "ARA Develops the Image Processing Analysis for Weapon Detection System" at **www.ara.com**, accessed 21 July 2013.

[69] Sparrow R, *Killer Robots in The Journal of Applied Philosophy*, Vol.24, No.1, 2007.

[70] *'…it is certain that if we pursue this technology, then future highly complex interactive robots*

will be moral agents with the corresponding rights and responsibilities.' Sullins, J. When is a Robot a Moral Agent? International Review of Information Ethics, Vol.6 (12/2006) accessed at **www.academia.edu** on 20 July 2013.

[71] Aaronson, Prof Sir Michael: *Robots don't kill people, it's the humans we should worry about.* The Conversation 31 May 2013. Accessed at **https://theconversation.com** on 1 July 2013.

[72] **Corporation** *noun*; an entity that has legal personality. Oxford; A Dictionary of Law (7th Edition).

[73] The US Government reportedly paid reparations to Bulgaria after an AGM-88 missile failed to guide onto its intended target in Yugoslavia. See *NATO Missile Goes Astray and Hits House in Bulgarian Capital.* The New York Times (online) 30 April 1999. **http://www.nytimes.com** accessed 6 July 2013.

[74] '*The LEGAD's overriding duty is to provide the commander with timely, accurate, relevant, succinct, legal advice*' UK Joint Doctrine Publication 3-46 *Legal Support to Joint Operations* (Second Edition), 2010. Para 112.

[75] Few land or maritime commanders would understand the detail of how collateral damage estimates are conducted prior to the use of an air-delivered weapon, or how the weapon's guidance system works. Consequently, the advice on whether to use a particular weapon is provided to the commander by his specialist air staff, but having received that advice, and having authorized use of the weapon, the commander is generally responsible for the outcome.

[76] *'For military systems deployed in the field, one possible method is through the use of a responsibility advisor, designed for both run-time and pre-mission aspects of a robotic mission.*' Arkin, Prof R: T*he Robot didn't do it: A position paper for the workshop on anticipatory ethics, responsibility and artificial agents.*

[77] Asaro, P: *'On banning autonomous weapon systems: human rights, automation, and the dehumanization of lethal decision-making.*' International Review of the Red Cross, Volume 94, Number 886, Summer 2012. Lines 824-829.

[78] *Mens rea:* the intention or knowledge of wrongdoing that constitutes part of a crime. Concise Oxford English Dictionary (12th Edition).

[79] '*…the objective of warfare is to achieve and exploit advantages to the enemy's detriment. Sensitive to this reality, the law of armed conflict has never been about ensuring a "fair fight"…*' Schmitt & Thurnher: *'Out of the Loop: Autonomous Weapon Systems and the Law of Armed Conflict".* Harvard College 2013. Page 232.

[80] Attributed to General George S Patton and used in the biographical film *Patton*.

[81] Sun Tzu *The Art of War* (Chapter 6). Published c.500BC.

[82] Cole, C *et al: Convenient Killing – Armed Drones and the Playstation' Mentality.* Fellowship of Reconciliation, September 2010. Page 4.

[83] The unsubstantiated claim has even been reiterated in a *Report on extrajudicial, summary or arbitrary executions* by Special Rapporteur, Philip Alston. Published by the UN General Assembly 28 May 2010. Paragraph 84.

[84] Filkins, D. *Operators of Drones are Faulted in Afghan Deaths.* New York Times. **www.nytimes.com/2010/05/30/world/asia/30drone.html** accessed 15 July 2013.

[85] Ground observers had reported a convoy moving towards an area where US forces were

engaging insurgents and queries whether the convoy contained insurgent reinforcements.

[86] *'Killing someone with an RPA is not different than with an F-15. It's easy to think that [it's like a video game], to fall down that trap. We're well aware that if you push that button somebody can go away. It's not a video game. You take it very seriously. It's by far nowhere near a video game.'* Interview with USAF Major Bryan Callahan. *'Interview with a drone pilot'.* Spiegel Online 12 March 2010. **www.speigel.de/international/world** accessed 16 July 2013.

[87] P W Singer is a Senior Fellow and Director of the 21st Century Defense Initiative at the Brookings Institution in Washington. He has extensively researched the use and development unmanned and autonomous systems.

[88] Singer, P W: *Interview with Defense Expert P W Singer.* Spiegel Online, 12 March 2010. **www.spiegel.de/international/world** accessed 16 July 2013.

[89] *Jus ad bellum criteria:* (1) just cause, (2) comparative justice, (3) legitimate authority, (4) right intention, (5) probability of success, (6) last resort, and (7) proportionality.

[90] But adversaries may seek to respond asymmetrically, and maybe illegally, in such a way that might result in greater loss of life (for example, by perpetrating terrorist atrocities against civilian targets).

[91] O'Connell, Prof. Mary Ellen: *Seductive Drones – Learning from a Decade of Lethal Operations.* Legal Studies Research Paper 11-35 published by Notre Dame Law School, August 2011. p20.

[92] Quintana, Elizabeth. *Unmanned Systems: Confusing Ethics.* A RUSI Analysis Paper dated 20 Apr 2011. Last accessed at **www.rusi.org** on 14 June 2013.

[93] Leveringhaus, Alexander. *Much Ado About Killer Robots*. e-International Relations, 4 June 2013. *('Three Fallacies in the Killer Robots Debate: [No.2] War becomes riskless, never mind the Russian nukes.)* **http://www.e-ir.info/2013/06/04/much-ado-about-killer-robots** accessed 7 July 2013.

[94] 'Collateral Damage' is defined as *'inadvertent casualties and destruction of civilian areas caused by military operations'.* Allied Administrative Publication (AAP 06). Published by NATO, 2013. Page 2-C-6.

[95] *'Just because an engagement is permissible by the law of war and the rules of engagement, it does not always mean that forces should engage…A lack of tactical patience can contribute to civilian casualties (CIVCAS).* International Security Assistance Force (Afghanistan) COIN Advisory Note No. 20100512-001 *Tactical Patience.* Source **http://www.isaf.nato.int** accessed 3 Aug 2103.

[96] For example, using technology such as that in the Tracking Point rifle. See **http://www.popsci.com/technology/article/2013-01/intelligent-rifle-now-ipad-app-wi-fi-infallible-accuracy** accessed 9 Oct 2013.

[97] Singer, P W: *Wired for War* (Penguin 2009) Chapter 10 (p.179) and specifically p.204.

[98] Due to the provisions of the European Convention on Human Rights.

Operation SERVAL: The Air Power Lessons of France's Intervention in Mali

By Air Commodore Al Byford

This article looks at the shifting of the West's military posture away from the enduring campaigns of the last decade and towards contingency, using the recent French-led intervention in Mali as a case study. Against a backdrop of popular and political reluctance to risk large numbers of ground troops in potentially volatile and protracted conflicts, Op SERVAL saw the French take a different approach, substituting mass with agility and tempo and with air power taking a leading role. The implications for the future use of air power are analysed below with important lessons for UK Defence made evident.

Introduction

The UK's military posture is shifting from conducting enduring campaigns to preparing for contingent operations that, by definition, will be difficult to anticipate or predict. Despite financial austerity, our national policy is to continue to intervene actively and on a global basis when we consider our national interests are at stake - but invariably within the framework of a coalition or alliance.[1] In the past, the onus had been on the US to head the military response to developing crises, but President Obama's strategic pivot towards Asia-Pacific means that states such as France and the UK must expect to play a greater leadership role in operations on the fringes of Europe or in Africa.[2] This may involve acting as the framework nation for multilateral operations (either under the auspices of NATO or within more disparate alliances and coalitions), or taking the lead in the initial stages of a contingency while the international community is considering and organising its response - a process that may otherwise be too slow and protracted to resolve a crisis before it spirals out of control.[3]

However, while the UK's policy aspiration remains interventionist, the sense of strategic fatigue induced by the campaigns in Afghanistan and Iraq has arguably sapped the West's political will to commit 'boots on the ground' and, more fundamentally, skewed political perceptions of the value of military force as a useful lever of national power.[4] Within this context, 'light-footprint' military operations - built around air, sea and Special Forces capabilities supporting regional or indigenous forces providing the combat mass on the ground – look like an increasingly attractive option. This scale of effort may now represent the threshold of 'what the market will bear' in terms of political commitment to interventions that may be considered by the public as discretionary rather than essential.

What role can air power play in this sort of environment? An early indication was provided by the campaign in Libya in 2011. Here, the UK and France used their air forces to provide much of the high-end combat capability (albeit depending primarily on US enablers) in what eventually became a NATO operation, but where the main effort on the ground was provided by indigenous anti-regime militia. Operation SERVAL - France's recent intervention in support of the government of Mali – arguably represents an even better illustration of the way that the agility, responsiveness and economy of effort provided by air power can be employed to exert the desired level of influence at a politically acceptable level of commitment. Consequently, this short paper draws on open source material to explore not only the air power lessons of SERVAL at the operational level, but also the broader relationship between air power, military strategy and national policy objectives.

The Crisis in Mali

In recent years, the Tuareg 'National Movement for Liberation of Azawad' (MNLA) has been conducting an insurgency in northern Mali. The failure of the Mali government to deal effectively with the MNLA eventually led to a coup in March 2012. With a weak interim government, three Islamist groups - 'Anser Dine', 'Al-Qaeda in Islamic Maghreb' and 'Movement

for One and Jihad in West Africa' – emerged in the ensuing instability to contest power. They quickly overran northern Mali, despite resistance from government forces and the largely secular Tuareg nationalists, who were also still fighting each other.[5] On 20 December 2012 the United Nations (UN) Security Council passed Resolution 2085, approving the formation of an African International Support Mission in Mali (AFISMA) to restore stability. The Economic Community of West Africa States (ECOWAS) and other African Union (AU) nations pledged to contribute troops to the mission. However, in January 2013 the militants launched an offensive to take southern Mali before AFISMA could deploy. This threatened thousands of entitled French citizens living in the capital, Bamako, and prompted the French

This map illustrates the furthest extent of the rebels' advance before French air attacks mounted from the Forward Operating Bases at Mopti Harbour and Sevare halted their offensive at Konna and Diabaly. Note the strategic scale and tempo involved; the campaign effectively ended after just 20 days with the recapture of Tessalit, some 1,200 km distant from the main Air Port of Disembarkation at Bamako. (Map source http://en.wikipedia.org/wiki/File:Northern_Mali_conflict.svg last accessed 27 November 2013; © Orionist / CC-BY-SA-3.0)

Defence Minister, Mr Jean Yves Le Drian, to announce on 10 January that France would mount a military intervention in support of the government of Mali. The immediate military aims of what became known as Operation SERVAL were twofold: first, to assist Mali forces in halting the militant offensive; and then to support AFISMA in recapturing northern Mali. The broader long-term policy aim was to 'secure the European neighbourhood' by 'giving Africa the tools to handle its own crises' through the reinforcement of African peacekeeping capabilities.[6]

France has longstanding national interests in Africa stemming from the colonial period, evident in over fifty military interventions since 1960. Despite President Hollande's electoral pledge to scale back involvement in *'Francafrique'*,[7] France maintains a significant level of engagement with francophone Africa. Consequently, much of the necessary enabling architecture for a military intervention, including some of the military force required, was already in place. There was an operational headquarters at Dakar in Senegal, a joint force air combat command at N'Djamena in Chad and a tactical HQ at Bamako in Mali, all connected by a secure communications network. Strategic Intelligence, Surveillance and Reconnaissance (ISR) was available on a daily basis from France's Helios satellite system, later supplemented by US space capabilities accessed through the Air Operations Centre in Ramstein in Germany.[8] Theatre ISR assets already in place included two Mirage F1-CRs and one Transall C-160 with a reconnaissance pod based at N'Djamena, two Harfang Unmanned Aerial Systems (UAS) at Niamey in Niger and two Atlantique II aircraft at Dakar in Senegal. In addition, France has developed and sustains a comprehensive network of long-serving Defence Attachés across West Africa. These officers were to play a key role during the crisis, facilitating and enabling military deployments, negotiating with and advising partners and allies, and developing and maintaining a high level of situational awareness as the operation unfolded at pace.[9] This combination of pre-existing assets meant that French forces benefited from a firm basis of understanding and familiarity from the outset of Operation SERVAL.

Campaign Chronology

The French Army's 'Cheetah Plan' was immediately activated to deploy high readiness forces (paratroopers, helicopters and mechanised units) to theatre.[10] Over 1,800 military personnel and their light armoured vehicles were deployed to Mali during the first week of the operation, from Chad, Burkina Faso and the Ivory Coast as well as metropolitan France. However, a lack of strategic air lift meant that capabilities had to be either leased commercially[11] or requested from allies to shift heavier cargo. The UK – now firmly linked to France by the 2010 Lancaster House military treaty – responded by mounting Operation NEWCOMBE to support her ally, making two C-17 Globemaster III heavy lift aircraft available to reinforce the air lift effort. Intra-theatre air mobility was also in short supply, resulting in further requests for NATO assistance. Eventually the US, Canada, Denmark, Belgium, Italy, Spain and Germany contributed transport aircraft and other non-combat capabilities to support the operation. The benign air environment allowed an uninterrupted military build-up to be carried out at Bamako, which was initially 400 km south of the militant advance. Forward operating bases were established much closer to the front-line, principally at Mopti Harbour on the Niger and at Sevare airport.

The French exploited the speed and responsiveness of air power to buy time while they deployed ground forces. The first priority was to stop the militants from reaching Bamako. Their offensive was split into two arms, totalling about 1,200 fighters in over 200 vehicles, and aimed to envelop the capital in a pincer movement. Following the coup, France had discreetly pre-positioned SA 342M Gazelle light utility helicopters at Ouagadougou in neighbouring Burkina Faso.[12] These aircraft were moved forward to Sevare when Operation SERVAL was implemented. On 11 January, four helicopters attacked the southern militant column near Konna, destroying the lead vehicles and forcing the rest to withdraw. There is a trade-off between simple equipment that is cheap enough to pre-position in an area of potential interest on a long-term basis, and scarcer, more sophisticated aircraft that must be retained centrally and deployed in response to the operational need. The Gazelles based in theatre were simple and effective enough, but relatively vulnerable. A single round of small-arms fire hit the pilot of one helicopter and severed an artery in his leg. Although he and his co-pilot brought the helicopter back to Sevare, the pilot later died of his wounds. A second Gazelle was also forced down by small-arms fire, but the crew was rescued and the damaged helicopter destroyed by another Gazelle to prevent it falling into the hands of the militants.

The helicopter attack successfully reduced the momentum of the militant advance, but highlighted the need for greater stand-off capability in theatre; the rebels were well armed, not least because weapons were freely available in the region in the aftermath of the Libya conflict. The militants fielded many 'technicals', pick-up trucks armed with heavy calibre weapons. These are a staple ingredient of African warfare and can generate considerable firepower. Consequently, more sophisticated EC 665 Tiger helicopter gunships were deployed as a priority, as their 30mm gun easily outranged the armament of most technicals.[13]

The Gazelles also lacked the range to engage the northern arm of the militant offensive from Sevare. Consequently, a night attack was launched by four Mirage 2000Ds, which halted the militant force near Diabaly. These aircraft were based at N'Djamena, over 2,000 km away, and needed two air-to-air refuelling brackets to carry out the mission. The reach of air power was further demonstrated on 13 January, when four Rafale fighters supported by two C-135 tankers flew 3,000 km from France across Algeria to attack logistics and vehicle parks in and around Gao with precision-guided weapons. The strike package then flew a further 1,690 km onto N'Djamena. Subsequently, air strikes were launched on a daily basis from N'Djamena, although tanker availability remained a limiting factor throughout the operation.

The overall military plan had emerged as 'block, drive and clear': stop the militant offensive, force them back and then secure territory and re-establish government control. By 15 January, sufficient French and Mali ground forces were available to start the second phase by attacking and defeating the enemy forces around Konna. However, the militants had resumed their advance in the north, so the main effort switched back to supporting the Malian forces defending Diabaly. Sixty strike, ten attack helicopter, forty ISR/tanker and thirty intra-theatre airlift sorties were flown during a week of concerted air-land operations. This stopped the

northern offensive in its tracks, enabling the build-up of land forces to continue to the point where the operation to retake northern Mali could begin. Preparations included forward-basing air assets at Bamako, to provide more responsive air support, while the ISR effort focused on building a comprehensive picture of militant activity, particularly in urban centres. This was supported by the deployment of the RAF's Airborne Stand-Off Radar System (ASTOR) to Dakar in late January. The Sentinel aircraft of No. 5 (AC) Squadron flew sixty-six sorties for 697 flying hours over the next 4 months.[14] The primary task was to provide a wide-area search capability in real time by monitoring pattern of life (principally by tracking road traffic with its synthetic aperture radar and ground moving target indication technology). However, ASTOR was also used to support more direct targeting by cross-cueing other assets onto individual points of interest for positive identification.[15] Meanwhile, Special Forces were infiltrated into the remote, northern mountain regions to locate militant strongholds and mark them for precision air attack using laser pointers.[16]

The Franco-Malian land offensive began on 26 January with the recapture of the strategically important town of Gao. Aerial reconnaissance was used extensively to generate the intelligence necessary to target precision air strikes, followed by persistent surveillance provided by a combination of UAS and Atlantique II aircraft. These shaping operations set the conditions for an air-dropped paratrooper assault on the local airport, accompanied by a simultaneous attack by mobile ground forces. The airborne and land forces linked up successfully and then quickly retook the urban areas. The success of this attack set the pattern for subsequent air-land operations. On 30 January, the AFISMA forces advancing from Niger joined up with French and Malian forces. The coalition of French and African forces, then liberated Timbuktu, Kidal and finally Tessalit in rapid succession. The conventional phase of the conflict was effectively over by 8 February.

The militants then switched to asymmetric tactics, including suicide bombing and hit-and-run raids against government buildings and supporters. The French-led coalition responded by mounting Operation PANTHER. Pattern-of-life surveillance was increased to locate hideouts, weapons and logistics caches and identify surviving militant leaders. The US increased its support with persistent ISR provided by Global Hawk and Predator UAS and EP-3 and other manned platforms. This allowed the *Armeé de l'Air* to concentrate on air strikes against militant targets. By April, the crisis had been stabilized and security was judged to be good enough for the process of re-establishing government control and rebuilding the Mali Armed Forces to begin. The French strategy is to withdraw progressively, handing over responsibility for security and stabilisation to a UN sponsored peace-keeping force drawn from ECOWAS and supported by a European Union mission to provide advice, mentoring and training. This includes a small UK military training team.

The conventional phase of the conflict was concluded in just 20 days of combat. The operation was often hard-fought in difficult conditions, but was conducted with striking economy of effort: under 4,000 French troops were eventually deployed in support of about 6,000

Malian troops and 3,000 AFMISA soldiers. They were faced by up to 12,000 Islamist fighters. Coalition losses were sustainable: seven French and about seventy Malian and AFMISA soldiers were killed in action, whereas about 625 militants are estimated to have died. Although it is too soon to judge the longer-term consequences for regional stability, Operation SERVAL met all of the political objectives that were initially set. The threat to Bamako was averted and northern Mali was secured in a rapid intervention at little cost. Although France's role was essential, the conditions have been established for ECOWAS to attempt to provide 'an African solution to an African problem'.[17]

Operational and Environmental Lessons

At the operational level, the major lessons of the campaign are unsurprising given the context of recent operations, but bear repeating. The majority relate to the provision and integration of the foundation enabling capabilities that glue a power projection intervention operation together: command and control in a joint air-land and *ad hoc* combined environment, including supplying liaison teams to AFISMA; the provision of timely intelligence; adequate, secure CIS to network scarce assets so they can be 'sweated' to maximise their value; and the provision of logistics support in a land-locked theatre where road transport is slow and difficult.

In any contingency, there will be a surge in demand for strategic ISR to build initial awareness as a crisis develops. France was able to act as a framework nation first and foremost because of her assured access to space-derived ISR from the Helios satellite system. Although this was later supplemented by US space capabilities, the message is clear: space will always be 'first on the scene'[18] and possessing a space-based ISR capability ensures that a state's particular strategic interests will be prioritised in a way that is simply not possible if, like the UK, access depends on allies' capabilities or commercial sources. Theatre ISR was also essential to generate detailed intelligence at the tactical level and, once again, demand outstripped supply comprehensively. This was also linked to the size of the theatre and scarcity of assets. Because the force-density ratio was so low, more effective integration was necessary to improve the effects chain response. In particular, better networking was required to make optimal use of the highest value assets, including tactical fighters, manned ISR, UAS, air tankers, air lift and maritime patrol aircraft. Finally, Operation SERVAL reinforced the lesson that tactical aircraft can provide responsive and effective long range strike support, although sortie rates will be determined by the availability of tanker support.[19]

France published the *livre blanc*, its strategic defence review, in late April 2013, and the lessons it learned are abundantly clear in the force structure recommendations for air capabilities.[20] Despite the austere financial environment, France seeks to boost investment in air-delivered power-projection capabilities in general and persistent ISR in particular. The impact of the 'air lift gap' on contingency planning is freely acknowledged, particularly where operations do not allow supply by sea or road.[21] Proposed new acquisitions include manned persistent ISR platforms and unmanned Predator UAS. The Rafale fighter aircraft, tanker/transport and

new tactical air lift acquisition programmes are all confirmed, although no increase in numbers is contemplated.

Wider lessons

While Operation SERVAL reveals and reinforces many enduring themes at the operational level, it also yields some broader lessons. Conceptually, UK doctrine increasingly theorizes about the value of forward engagement, including the importance of Permanent Joint Operating Bases and regional engagement forces. However, France has long since embraced this principle and put it into operational practice. In West Africa, the breadth and depth of the Defence Attaché network, the availability of established regional bases and the presence of limited forces in place (including pre-positioned equipment) all provided a firm foundation for intervention. Forward engagement enabled an immediate and effective response, based on familiarisation with the regional context backed by a deep level of understanding and operational experience acquired in-theatre over many years. It is therefore incumbent on the RAF to consider how it understands and develops the role that UK air power may play in a force posture based on forward engagement.

Perhaps more fundamentally, SERVAL also provides wider lessons about the utility of military force in the post-campaigning era. While France has a long tradition of using military force as a tool of national influence,[22] there is a perception that UK Defence has become unduly risk averse and bureaucratic; as General Sir Peter Wall, the outgoing Chief of the General Staff observed, this will inevitably inhibit our ability to provide agile military effects and exert the political influence we desire.[23] In comparison, Operation SERVAL demonstrated the French military's ability to respond to a political imperative for immediate action without agonising unduly about risk or the resilience of its logistic tail, and in the absence of a clearly defined strategic directive, at least in the initial stages of the intervention. In fact, this supported operational agility by offering the military considerable freedom of manoeuvre, allowing a cohesive, brigade-sized force to be formed from a mix of pre-positioned forces-in-place and rapid response, high readiness elements without arbitrary troop-number caps or other political constraints.[24]

However, the risks France accepted were mitigated by the measured judgement of the 'art of the possible' that was available because of the depth of understanding provided by long-term regional engagement. Nevertheless, familiar shortcomings in key, foundation enabling capabilities (particularly ISR and air lift) did emerge that required recourse to allies and partners. One of the pitfalls of depending on allies for access to capabilities – a position the UK also finds itself in - is the lack of assurance that they will be provided when most needed: reportedly the US turned down a French request for additional tanker support and also demanded payment to defray the costs of the C-17 support it provided, although this was later waived.[25]

Conclusion

Operation SERVAL tested the ability of France's military forces to support national policy objectives by projecting power at long range. The success of the operation in resolving

an unforeseen crisis quickly and effectively provides important lessons for UK Defence in general and the RAF in particular. The benefits of a policy of forward engagement as a basis for intervention are clear, as is the message that a measured and robust approach to risk underpins operational agility.

Although the air environment was benign, the experience of French air forces illustrates some of the challenges that the RAF can expect to face if the UK is required to act as a framework nation for initial crisis response operations in our 'near-abroad' around the fringes of Europe or in Africa. Air power played a leading role in Operation SERVAL in three ways. First, it provided the immediate response necessary to avert an impending disaster in the crucial first forty-eight hours by slowing the momentum of the militant offensive until ground forces could deploy in sufficient strength. This was accomplished by deployed air assets and, on occasion, by effects projected directly from metropolitan France. Second, air power shaped the battlespace. It enabled the timely deployment of high readiness forces to an operational theatre where road and sea transport was not feasible; and it generated the intelligence required to ensure tactical success through air and space-derived persistent ISR. Third and finally, air power played a critical role in the tightly integrated joint and combined air-land operations that brought the campaign to a swift conclusion, notably by providing overwhelming precision fires on demand.

Arguably, Operation SERVAL represents exactly the sort of model for Joint Expeditionary Force employment envisaged in forthcoming conceptual work. A small (brigade-sized) and agile Joint Force created momentum through tempo rather than mass, using high-end capabilities to support larger, indigenous coalition forces in achieving a decisive outcome on the ground. What is certain is that Operation SERVAL provides a compelling example of the relevance of air power's unique attributes and capabilities in the post-campaigning era of contingency. A French airman's perspective of the role of the *Armeé de l'Air* in Operation SERVAL is illuminating:

> *'The air force and "air power" are political tools. For our political leaders, the ability of what we call "first entry" is very important - if we intervene and have to take on responsibility.'*[26]

A senior RAF leader recently observed that we are prone to 'obsess about what we do rather than what we are for'.[27] Examining the part that air power played in delivering the political objectives that Operation SERVAL was designed to achieve helps us to understand much more clearly what an air force 'is for' in the contemporary operating environment.

Notes

[1] William Hague, Foreign Secretary, 'For the first time in decades our diplomatic reach will be extended not reduced', Parliamentary Announcement, 11 May 2011, **https://www.gov.uk/government/news/foreign-secretary-for-the-first-time-in-decades-our-diplomatic-reach-will-be-extended-not-reduced**, last accessed 12 August 2013.

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[3] JDP 0-30 *UK Air and Space Doctrine*, DCDC July 2013.
[4] 'Britain must avoid "withdrawal through fatigue" image over Afghan pull-out', *The Daily Telegraph*, 12 August 2013.
[5] *Pathfinder*, Issue 200, May 2013.
[6] Col. Marc Couruy (Head Africa Desk JHQ Paris and Special African Affairs Adviser to CHOD), presentation to ARRC Study day, 6 June 2013.
[7] http://www.rusi.org/analysis/commentary/ref:C50FE5E5B77B13/, last accessed 12 August 2013.
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[9] *Op Cit*, ARCC Study Day.
[10] *Op Cit*, Pathfinder.
[11] These included two commercial Antonov An-124 Condor heavy lift aircraft.
[12] 'Sand on their boots; the intervention in Mali', The Economist, Issue No.23, 26 January 2013.
[13] http://www.defensenews.com/article/20130121/DEFREG04/301210002/Early-Lessons-From-France-8217-s-Mali-Action-Emerge, last accessed 12 August 2013.
[14] Major Seymour Bailey, briefing at RAF Waddington International Air Show, 4 July 2013.
[15] http://www.flightglobal.com/news/articles/royal-air-force-lifts-lid-on-sentinels-role-in-mali-388092/, last accessed 12 August 2013.
[16] http://online.wsj.com/article/SB10001424127887324734904578239472166070626.html, last accessed 12 August 2013.
[17] *Op Cit*, The Economist.
[18] JDP 0-30.
[19] *Op Cit*, Pathfinder.
[20] http://www.defense.gouv.fr/actualites/articles/livre-blanc-2013, last accessed 12 August 2013.
[21] http://www.janes.com/article/10286/analysis-mali-intervention-highlights-france-s-strategic-airlift-gap, last accessed 12 August 2013.
[22] For example, the participation of Free French Forces in the D-Day landings had less to do with defeating the Wehrmacht than establishing France as an equal partner in establishing the post-War world order.
[23] 'Wars of the future will be short, sharp and bloody says army chief', *Daily Telegraph*, 27 June 2013.
[24] Olivier Tramond, 'Early Lessons from France's Operation SERVAL in Mali', *Army* 63.6, June 2013, pp 40-43.
[25] *Op Cit*, The Economist.
[26] Quoted in *Pathfinder* Issue 200, May 2013.
[27] CAS Fellowship Forum, RCDS, June 2013.

Viewpoints

Rising from the Ashes Democratization in the States of Former Yugoslavia

By Group Captain Clive Blount

Map from Noel Malcolm, *Bosnia: A Short History*, (London: Macmillan, 1996).xiii

Introduction

"If there is ever another war in Europe, it will come out of some damned silly thing in the Balkans"

Otto von Bismarck

It is now over twenty years since the destruction of the Socialist Republic of Yugoslavia by a series of bitter wars, wars in which a considerable number of the readers of this journal were personally involved. Today, there is little coverage of the Balkans in the British media and our strategic focus has shifted elsewhere. Discussions within military circles is seemingly confined to discussions of the international operations from a historical perspective, concentrating on such areas as the coercion of Milošević or the efficacy of unsupported air power. However, the political map of the region is still far from fully stable. Although the so-called 'democratic peace theory' has been subject to a deal of discussion, international opinion is agreed that the establishment of democracy in the Balkans is likely to be the most effective means of suppressing future conflict.[1] The successor states spawned by the demise of Yugoslavia started on the road to becoming democracies, but have had varying degrees of success. Given Clausewitz's dictum of war being an extension of policy by other means, it is worth looking at the current state of the region and considering the *political* legacy of the Balkan wars of the 1990s. An understanding of many factors that aid, or hinder, progress towards stable democracy in this troubled region - formerly dominated by communism and beset by ethnic and religious divides – would be invaluable to inform ongoing, and future, international democratization projects and may shed light on the possible futures of those countries struggling with the aftermath of the 'Arab Spring' or, indeed, Afghanistan. This article will detail the history of the fracture of Yugoslavia and the road to democracy of the resulting new states. In particular, it will describe the role of external agency in the democratization process - both in agitating and mitigating the many animosities present in the region - and will suggest that the involvement of external states or international organizations, if applied intelligently and consensually, can overcome significant obstacles and prove to be a key to the success of democratization.

Let us first turn to the recent history of the region. Initially known as the "Kingdom of Serbs, Croats and Slovenes", the state of Yugoslavia *("Land of the Southern Slavs")* emerged from the Paris Peace process in late 1919 and was a conglomeration of smaller territories derived mainly from the defeated entities of the First World War. The new state, based around Serbia, took in Croatia and a part of the Banat from Hungary, Bosnia from Austria, and pieces of Bulgaria and Albania. The 'donor' states themselves had only acquired some of these territories during previous Balkan wars, so suspicion and intrigue beset the new state from the beginning. The population was a mixed bag of religions and cultures, with only similar languages to draw them together.[2] The task of unifying these disparate communities was far from complete when the Second World War reopened old divisions. A brutal guerrilla conflict set Yugoslavian resistance factions both against Nazi occupiers and each other with equal fervour. The Croat

leader, Pavelić, for instance, favoured fascist Italy, Mihailović led a Serbian royalist/nationalist resistance group (the Chetniks), whilst Josep Broz, better known by his *nom de guerre* "Tito", led the eventually victorious communist resistance – which had at least an aura of pan-Yugoslavian support. Himself half-Croat/half-Slovene, Tito attempted to forge a postwar unified state by granting the ethnic minorities in Yugoslavia – Hungarians, Macedonians, Albanians (mainly Kosovars) and Montenegrins – approximately equal status with the original constituent nationalities. However, the economic advantages of union barely concealed the traditional animosities and perceived inequalities, and such issues simmered under the surface as Tito's weak state survived his split with Stalin and struggled as a non-aligned island in Cold War Europe.[3]

During the reign of Tito, it was famously said that Yugoslavia had "six republics, five nations, four languages, three religions, two alphabets and one party" such was the firm grip Tito and the Communist party had on rule.[4] However, Tito made no provision for succession and, after his death in 1980, a weak rotational presidency system became gradually more ineffectual. Against the background of spiralling economic problems and high unemployment, (largely driven by the withdrawal of western aid in the absence of the cold war imperative) a number of politicians manipulated sectarian sentiment to promote extreme nationalism, emphasizing the differences between the constituent communities in Yugoslavia to strengthen their personal hold on power. In Serbia, a longstanding communist politician, Slobodan Milošević, seized the opportunity to use the six-hundredth anniversary of the Ottoman victory at Kosovo Polje to invoke Serbian nationalism in his grab for power. The break-up of Yugoslavia became increasingly inevitable as the various nationalist and ethnic groups edged for power.

In 1991, distracted by the war in Iraq and the continuing death throes of the Soviet Union, America and the west did not wish to get involved in Yugoslavia. Popular opinion in the west, voiced later by British Prime Minister John Major, was that the region was doomed to conflict because of 'Ancient Hatreds' that had been suppressed by the 'discipline of communism'.[5] This simplistic view should be dismissed, but it has much popular traction and is often mistakenly expressed as the driving problem in the region. As Noel Malcolm points out in his seminal history of Bosnia, the "animosities that did exist in the region were *not* absolute and unchanging. Nor were they the inevitable consequences of the mixing together of different religious communities". The resentment felt by Christian peasantry towards Muslim land owners during Ottoman rule, for instance, was largely due to economic inequality and "varied as economic circumstances changed…for most of the period after 1878, the different religious or ethnic communities in Bosnia lived peacefully together" with the major outbreaks of violence being driven from outside the country.[6] Misha Glenny expands this argument further and suggests that the *"influence of the great powers has contributed significantly to a history that is not static* – in which age-old enmities are doomed to permanent repetition – but breathtakingly dynamic" (author's emphasis).[7]

Great power influence played a role in June 1991, when an inconclusive and lacklustre visit to Belgrade by US Secretary of State James Baker convinced the parties vying for power that there

was little interest by the United States in Yugoslav affairs. European diplomacy was equally ineffectual. Four days later, Croatia and Slovenia declared independence, which resulted in the short-lived Yugoslav invasion of Slovenia and, subsequently, three increasingly brutal wars that were eventually to kill hundreds of thousands of people, displace two million and result in the break-up of the country of Yugoslavia.[8]

The differing strategies of Europe and the United States were rapidly found wanting. Europe believed it could 'solve' Yugoslavia without the United States; the Americans thought they could leave Europe to sort out its own problems now the Cold War was over. However, Europe was deeply divided, with different national interests and deep suspicions about fellow members' intent. For instance, when, effectively, the Germans forced recognition of Slovenia and Croatia at the end of 1991, France became convinced that Germany had designs on the region, described by Brendan Simms as "some form of German-dominated *Mitteleuropa*".[9] US policy in the region was encapsulated by Baker's famous statement "We don't have a dog in this fight".[10] Disinterest, half-hearted policies, and attempts at enforcement by the international powers did much to encourage the bitter conflict; it would take four years before Washington decided that it did have interests in the region and stepped in to apply its leadership and resources. The Dayton agreement of 1995 largely settled the boundaries of the emerging new republics, but it took another conflict, in 1999 between the US/NATO and Serbia over Kosovo before significant progress could be made towards true democratic transition.

Macedonia's declaration of independence passed largely peacefully in September 1991, but when Bosnia declared independence in March 1992, it triggered the most violent phase of conflict.[11] Later in 1992, the republics of Serbia and Montenegro declared themselves as a rump state to be known as the Federal Republic of Yugoslavia (FRY) and asserted that it was the sole legal successor to Communist Yugoslavia. Other constituents of the former state opposed these claims, and the United Nations refused its request to assume the Yugoslav membership. It eventually gained UN membership in 2000 after the overthrow of Milošević and was officially renamed Serbia and Montenegro in 2003.[12] In 2006, Montenegrins voted for Independence and the States of Montenegro and the Republic of Serbia were formed. In February 2008, Kosovo split from Serbia and declared itself as an independent republic. This initial attempt at the democratization of the socialist state of Yugoslavia had clearly failed.[13] The conflict and breakup of the former Communist Republic of Yugoslavia was driven by self-interested elites invoking issues of ethnicity and race to protect their own power, undeterred by – or even encouraged by the lack of interest of - external powers.[14] These wars were not revolutions by the people, but by armed forces directed by power-seeking politicians. However, what is of more importance now is the democratization of the resulting new states post the civil wars and international military interventions. This article will, therefore, now examine the quality of democracy that has been achieved by those new states since independence.

There are many methods of classifying the 'quality of democracy', each of which concentrates on different criteria and has its own particular utility. However, as an illustration of general

progress in the region under discussion, *The Economist Democracy Index* provides a useful means of comparison; it assesses the quality of democracy by scoring electoral process and pluralism, functioning of government, political participation, political culture and civil liberties. The 2012 edition ranks 167 countries. The former Yugoslavian countries occupy a wide range. Slovenia is the highest ranked state at 28th (equal with France), Croatia is 50th, Serbia 66th, Montenegro 76th and Bosnia Herzegovina 98th. (For comparative purposes, the United Kingdom ranks 16th; the United States 21st).[15] Charles Tilly suggests that a regime can be considered democratic "to the degree that relations between the state and the citizens feature broad, equal, protected and mutually-binding consultation".[16] That is: where there is the widest political inclusion of the population; there is a minimum of categorical inequality - with no group being either afforded special rights or, indeed, discriminated against; citizens are granted due process with agents of the state being unable to use power for personal gain or to punish personal enemies; and the state has a clear and binding mandate to act according to its citizens' wishes. Let us now, therefore, take each of Tilly's criteria in turn and discuss examples of progress, or otherwise, among the new states.

First then, *breadth of inclusion in the political process*. Against the background of a region deeply divided amongst a number of ethnic, national and religious groups it is perhaps surprising that elections in most of the new states are open to a large percentage of the citizenry. Parliamentary election voter turnout is typically quite high with figures in the 45%-55% range.[17] However, worryingly, these turnouts have been decreasing recently with an increasing number of voters expressing the view that elected governments are not carrying out their wishes; possible reasons for this perception will be discussed shortly. In addition, there are a number of areas where significant minority groups are excluded from the political process. These include the Albanian population in Macedonia, minority groups in the ethnically mixed regions of Serbia, such as the Sanžak and Vojvodina regions, and the Serbian population in Northern Kosovo centred on Mitrovica. There also remain significant numbers of Internally Displaced Persons, and significant migrant Roma populations across the region, who are currently still denied political rights.

Turning now to *equality amongst the citizens of the new states*. The socialist regime in the former Yugoslavia actually accommodated larger numbers of women in politics than many other communist regimes and this legacy has been carried forward to democratic politics in the new states. Serbia, Croatia, Macedonia and Bosnia have all committed impressively to women candidates, with women filling around 15-20% of seats in their legislatures.[18] This compares favorably to the United States, for instance, where women fill around 18%.[19] In addition, all states have made considerable progress in stamping out violence against women. However, there is still considerable hatred towards the gay community in a number of the states with little government activity, or indeed, apparently, motivation, towards building understanding. The previously mentioned Roma population suffers serious discrimination, particularly in Bosnia.[20]

Tilly's third criterion is that of protection - *how are citizens protected from the misuse of power?* The quality of the judicial process in the region has improved steadily although there is still a deal of concern in some of the countries regarding the opportunities for political interference and manipulation of the legal process. In Serbia, in particular, there is little provision for independent oversight of the appointment of judicial officers and there has been little progress in establishing civilian control of the security forces.[21] A particular manifestation of this issue was in the inability to bring high profile war criminals to justice, despite government pronouncements of support for the ICTY process; the security services of Serbia and Montenegro, for instance, has sufficient independence that they could not be forced to handover erstwhile 'heroes'. Interestingly, the latest European Commission report on Montenegro suggests that since its independence from Serbia in 2006, the accountability of the judiciary has much improved.[22] Corruption is endemic, and the ability to 'buy' political influence enables a certain immunity from the legal process.

Finally, is there a *mutually binding relationship between citizen and regime?* As mentioned previously, although results vary between countries some "70% of the people do not think that their respective countries are run by the will of the people".[23] This appears to be for two main reasons. The first is essentially the inability of governments to function effectively, with poor administration, weak legislative processes for bringing decisions into law, and a civil service that has yet to develop a professional reputation and that can attract high quality recruits. This is perhaps unsurprising after decades of centralized communist government. Furthermore, although elections enable the populace to identify a direction for the country and to determine who wields power, there is a lack of perception that democracy is an on-going participatory process. Elected politicians see themselves as 'trustees' rather than 'delegates' and, once elected, fail to consult. The concept of a civil society using activism and engagement to drive government has been slow to catch on.[24] In some areas, over-weaning international involvement has exacerbated this issue. In Bosnia and Kosovo, for instance, international commissioners have been able to veto legislation and official appointments if they obstruct agreed international guidelines.[25]

There has been a clear move in the direction of democratization but, with the exception of Slovenia and, perhaps, Croatia, many issues still impinge on the quality of democracy in the region. There are a number of main retarding factors. The first has been the problems in defining statehood for the new nations. Serbia naturally saw itself as the heir to the Yugoslav legacy and the disputes over Kosovo, Montenegro and its minority enclaves have been well documented. However, even minor disputes, such as international disagreements over something as fundamental as the name of Macedonia have been equally disruptive.* Such disputes still facilitate issues to impact on democratic politics within the region. In addition, corruption is endemic across most of the region and impacts all aspects of life. Moreover, the communist legacy bred an attitude that central government should solve all problems and provide for all needs. It has influenced society such that work, initiative and

* Greece refuses to recognise the name *Macedonia*, the current compromise is the *former Yugoslav Republic of Yugoslavia* (fYROM)… although, within NATO, Turkey refuses to recognise *fYROM* and insists on *Macedonia*!

motivation are negative qualities, attitudes that will inevitably retard the development of modern liberal democracy and prevent the development of a healthy, competitive economy.[26]

The adverse effects of International indifference on the early attempts to democratize the former Yugoslavia are clear. External initiatives have continued, on occasion, to produce adverse effects and ill-informed diplomacy, described by Farkas as "external meddling that presumes to understand [the region]"[27] has often undone progress. That said, it is clear that the single most important external factor in facilitating democratization has been the involvement of the European Union (EU). Whilst membership of the EU is seen as a gateway to wealth via access to EU markets, subsidies and development funding, the conditional approach that the EU has imposed for accession has directly addressed many of the retarding factors described above. The EU has determined that the best hope for enduring peace and stability in the Balkans is democratization. It has insisted on a condition of liberal democracy for membership, which aspiring member states must accept to receive the eventual benefits.[28] The Stabilization and Association Process, based on careful two-way negotiation, has not only made development funding available for the reform of justice, governance and public administration, private sector development, transport, environmental issues and agriculture, but has also seen the EU adopting a mentorship role in building democratic processes and institutions and setting standards for 'good behaviour'. Essentially, to aid accession, the EU has forced an overhaul of old communist mindsets and is teaching nations 'how democracies work'. The EU has also provided much aid, both material and intellectual, to fight corruption. Tilly identifies 'state capacity' as an essential factor in the democratization process.[29] This is the ability of the state to supervise democratic decision-making, put its results into practice and to fulfill the responsibilities of a state, such as protecting the population. Essentially, the EU has provided the nascent democracies a large portion of the state capacity that they themselves were missing - or where the structures they possessed were obsolete. In addition, and most importantly, the desire to be part of the community is forcing entities to agree on outstanding nationalist and ethnic disputes.† Slovenia led the way joining the EU in 2004, Croatia acceded in July 2013; the other countries in the region are at varying stages of progress.[30]

It would be remiss of us, however, to not be cautious about future progress in the light of the financial crisis both internationally and, more specifically, within the Eurozone. The crisis has had at least three negative effects on the Balkans. First, the EU itself has become preoccupied with the economic troubles and has largely put the enlargement agenda to the back seat. Second, fighting the financial crisis itself is draining individual government resources and diverting attention from the necessary accession reforms and advocacy efforts. It was quite evident from the very onset of the crisis that countries immediately became introspective and a trend emerged of re-nationalization of policies in the EU. Third, as the EU is devising a new regime of economic governance for the future, it will undoubtedly put more emphasis on the candidate states' economic and financial policies. The EU will inevitably seek to prevent

† At the moment of writing (20 Apr 13) Kosovo and Serbia appear to have signed an historic agreement that promises significant progress (*The Times*, on-line edition, 20 Apr 13)

the future accession of countries which are economically weak and perceived as potentially disruptive and unable to conform to its newly established, stricter rules.[31] That said, there appears to have been little dimming of appetite in the Balkan countries for EU accession. Serge Brammertz, prosecutor for the International Criminal Tribunal for the former Yugoslavia, expressed the view that "It is clear that what is attracting countries to the European Union is, of course, the European Market and European solidarity, and it was quite clear during all of the discussions we've had that the economic advantages of EU membership are one of the main, if not the main reason, for Serbia and other countries to implement difficult political and economic reforms. The financial crisis has only accentuated this." More widely, Thomas Mirow, President of the European Bank for Reconstruction and Development, has argued that there was a deeper reason why the countries of former Yugoslavia hoped to gain entry to the EU. "My sense is that the way the Western Balkan states look at the European Union is quite independent from cyclical economic development. They look at Europe as being the anchor, being the only long-term perspective that would also secure that no new conflicts will arise within the Balkans."[32]

Despite the bitter conflict and schisms that resulted after the death of Tito and, essentially, the failure of the unified socialist state of Yugoslavia to move from communist dictatorship to a more democratic form, the resulting new republics have had varying degrees of success in moving towards democracy. Whilst Slovenia and Croatia have made the most progress, and are sufficiently democratic to be accepted into the EU, there is still evidence of exclusion of minorities, weak civil society, and lack of regime accountability in the region. Issues over statehood, a centralized, self-serving, government mindset derived from communist times, and endemic corruption have stalled progress. However, external intervention in the form of EU mentorship with the prize of eventual membership has been most successful in fulfilling a leadership role to minimize and, hopefully, eventually overcome these issues. The EU's role in the solution of conflict has been based on agreements that are accepted by all sides to ensure sustainability. Not the least, all parties have to agree that democracy is a desirable end state. The set of problems facing the nascent democracies of the fractured Yugoslavia were as daunting as can be imagined – the ideological, ethnic, religious and national divides were as pronounced and bitterly fought as anywhere in the world; if these states succeed in the path to democracy, facilitated by international leadership in effect substituting for, and nurturing the reconstruction of, the machinery and philosophies of state, the clear lessons are likely to have applicability in other areas of conflict and emerging democracy.

Notes

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Viewpoints

Air Power: Independent Action and Independent Effect

By Colonel Francesco Agresti - Italian Air Force

Introduction

The perennial debate over air power fighting independently is still alive and kicking and continues to be the subject of emotive discussion. Indeed, historical experience has shown that, in many cases, the proclaimed capabilities of air power - to wage and win wars - have been exaggerated. Nevertheless, it would seem that there are several sound arguments for re-claiming a primary, independent role for air power today, but this time perhaps with some credible chances of success. Broadly outlined these are:

- The revolutionary improvement of many air power capabilities largely fostered by the computer-based IT revolution of the last 25 years.
- The evident success of air power in some of the most important conflicts of the post-Cold War period since the first Gulf War; notably Kosovo (1999) and Libya (2011), were it has provided the leverage for victory.
- A favourable cost-benefit balance that air power offers to decision makers and military planners when considering the "overall costs" of a military option.
- The low vulnerability of air power, and, as a consequence, the fact that it is no longer necessary to divert assets in order to achieve and maintain "air superiority" - as used to be the case in the air wars of the past.

- Last, but not least, the practical and doctrinal improvements to *Air Command and Control*, which has become much more flexible and more responsive to the challenges of the dynamic environment of today's theatres of operations.

But things, of course, are often more complex than they appear at first glance and there are at least three major challenges that can be used to counter the points above and trip-up the premise that air power can and should operate independently.

The first problem is that "operations" are an inherently joint business. In any military operation, even in the smallest, there are unique and valuable talents and attributes brought to the fight by other Services. Furthermore, the strong interdependence amongst the different operating domains is quite obvious and, in turn, this means that the employment of air power, at the operational level of war, can hardly be envisaged outside of a joint context.

The second problem is that the full spectrum of possible military operations, ranging from non-combatant operations and humanitarian assistance to state-on-state war, is so wide and multi-faceted that the idea of air power doing the job alone simply does not work. Modern warfare is far too complex to be successfully dealt with by a single arm.

Finally, the argument can be put forward that the likely challenge and complexity of any recent or future scenario is such that a response has to be "manoeuvrist" in nature to be successful, which places a premium on the variance of capabilities as well as on the ability to skilfully combine energies in a "synergistic" effort. Another acknowledgement of the importance of jointery.

If we agree that operational success stems from a joint effort, we are presented an interesting paradox. One in which, on one hand, we see air power acquiring enhanced capabilities and value, but on the other, it is increasingly difficult to think of air power as the lone "war winner" envisaged by some theorists in the past. This is perhaps the reason why many military thinkers continue to point out that the relevance of air power and air forces in military operations is entirely situational.

This statement is probably true, but we may wonder if it is still possible, at the strategic level of war, to think of an air power-based strategy rather than a land power - or a sea power-based strategy for crisis resolution, and, in this case, establish the likely implications. Indeed, nobody should feel uncomfortable with the assertion that in Iraq and in Afghanistan a land power-based strategy has been used, whereas in Kosovo and in Libya we have seen the application of an air power-based strategy. This obviously does not mean that land power or air power were the forces intended to win the war alone, but it does mean that land power or air power embodied the decisive capability upon which the joint campaign had to be built.

In order to clarify this concept it is beneficial to look back and see what has actually happened in the last quarter of a century or so.

The first Gulf War, as affirmed by many analysts, was a true turning point in the history of air power. In fact, for the first time ever, air superiority was achieved very quickly, and this left a significant surplus of air power capabilities and firepower for other military purposes. The final result was that, thanks to air power, the Coalition achieved the operational and tactical paralysis of the Iraqi Army, meaning that the ground war would last just 100 hours. This undeniable success of the air arm and the revelation that the Americans and their allies could benefit from this new asymmetric advantage in the future, opened up a brand new perspective for air power employment. This novel outlook, merged with the new political environment of the post-Cold War era in which a new feeling of security in the West marked the transition from the concept of "wars of necessity", to the possibility of fighting "wars of choice", as part of a global peace stabilization effort sponsored by the UN. In this situation, air power was seen by both politicians and the public alike, as a viable military tool of leverage to achieve limited political objectives.

The period 1991-2001 could be labelled as the "decade of coercive air power". Operations Southern Watch and Northern Watch in Iraq; Operations Deny Flight and Deliberate Force in Bosnia and Operation Allied Force in Kosovo, are the most well-known cases of this new era. Air power was clearly the weapon of choice for supporting coercive diplomacy and for fighting limited (light) wars of choice. It was an era where the use of military force, centered on air power-based strategies was freely used to either prevent unacceptable Courses of Action (COAs), control escalation, protect civilians, or to enforce compliance with international law and stop human rights violations.

The attacks of September 11th 2001, however, prompted a radical change to this approach. In America, as well as in the rest of the Western world, a new sense of urgency about the need to guarantee security at home, quickly supplanted the feeling of confidence acquired with the end of the Cold War. The implications of this change were soon palpable. Coercive diplomacy was rapidly replaced by a much more aggressive political approach, whose main objective was the disruption of terrorist bases worldwide. From a military strategic perspective, the publicly supported need to eradicate terrorism unlocked the possibility to fight pre-emptive, preventive wars, to commit massive military forces, if necessary putting boots on the ground and to accept some level of attrition and losses. It is clear that coercion could not suffice as an option any more, and, in fact, it was replaced by strategies of denial. All these elements characterized the main wars of the next decade (2001-2011). It is almost needless to say that both in Afghanistan and in Iraq, a land power-based military strategy was employed and since control of the air was immediately established, air power regressed to a supportive role. This was even more evident when, in both situations, the Coalition forces became more and more involved in counter-insurgency and irregular warfare.

The war in Libya in 2011 represented a significant diversion from the previous approach. In fact, Libya saw a mix of some of the themes seen in the two previous decades. Although the Coalition intervention was triggered by the need to stop the use of heavy weaponry against civilians, the will to help the anti-Gaddafi forces with the final aim of overthrowing the Gaddafi regime was blatantly clear. Nevertheless, the strategic context and the political posture of the moment were very different from those of the Years 2002 and 2003. The Global War on Terrorism was still a priority but had ceased to be a strong driver for robust commitments. This new political stance and the resumed unwillingness to suffer continuous losses obviously had a significant effect on military strategy. The possibility of putting boots on the ground was excluded from the outset and air power became once again the weapon of choice for what was expected to be a new "light" and "short" war.

From the brief historical summary presented above, we can highlight at least three key points. The first point is that in the last 25 years we have been utterly incapable of predicting future events and of anticipating future patterns - such as the invasion of Kuwait, the September 11th attacks or more latterly the so-called *Arab Spring*. At the same time though, with hindsight we can actually outline a pretty clear logical pattern in the military strategies adopted to deal with the major crises of the post-Cold War period. More specifically, we may say that strategy has not been as accidental and unpredictable as events, and, in turn, the role and relevance of air power although still situational has followed a similar logical pattern.

The second point is that, in general, when looking at the social and political trends of the last few years, we see an increasing public sensitivity about the use of force and of a growing political reluctance to commit military forces abroad, especially in some particularly delicate areas of the globe. This more cautious approach leads to a pretty clear aversion against putting boots on the ground and thus risking the difficult, protracted disengagements seen in some previous conflicts. A further consequence of this is that the use of force may be acceptable only as long as the risk of collateral damage is minimized. That is, civilians and the national infrastructure base should be spared. In the light of this, we may have already entered, or may be about to enter, a new season of coercive diplomacy, which would actually be fully coherent with all the above-mentioned conditions. In this case, air power could once again be the weapon of choice, and therefore there would be scope for air power-based military strategies.

The third point is that air power (probably thanks to the great advances and the new capabilities already discussed above) has proved to be extremely effective in supporting coercive strategies. Indeed, although we cannot say that coercion itself is an exclusive domain of air power, we can certainly say that in comparison with other arms, air power offers some unique advantages. These include mass, and, if necessary, massive firepower with a lower logistical footprint, no or very low attrition and no or very low friendly losses. It is also potentially more cost-effective over the longer term.

But if we have indeed entered a new phase of coercive diplomacy, in which the use of air power-based strategies will be more likely, in the post-Afghanistan era air power needs to be able to meet some key requirements whilst successfully facing new, big challenges. As for the requirements, it would certainly be necessary to fill some capability gaps, part of which emerged amid the lessons identified during the Libyan conflict. In particular, it will be necessary to develop the true ability to fight under threat conditions (because the air space of future adversaries will be increasingly less permissive); a greater ability to carry out deep, precision strikes; much better stand-off ISR and more robust support capabilities (AAR, EW etc.); adequate protection/defence capabilities in the cyber domain and unhindered use of space capabilities.

As for the challenges, we should remember that the main precondition for the adoption of coercive strategies is the presence of an actual capability edge of the coercer over the coerced. This means that it would be necessary to maintain the present asymmetrical air power advantage. But the idea that the US and its allies will always enjoy the benefits of air dominance as a given does not match with some existing and very visible trends. To begin with, the high costs of technology and of air power capabilities combined with enduring budget cutbacks will make it difficult to maintain the present capability gap over the longer-term perspective. The obvious consequence of losing this asymmetrical advantage would be that, at least in certain situations, air superiority or air dominance might not be taken for granted any more by Western-led coalitions, thus making an air power-based coercive strategy impracticable. To tackle this situation it will be necessary to avoid overconfidence and to compensate decreasing numbers with some mitigating measures.

To conclude, we may have reached a sensible compromise regarding these issues. The fact that the two major engagements of this new century (Iraq and Afghanistan) have seen air power playing only a supporting role seems to confirm the idea that air power relevance is highly situational. However, we have seen air power achieve an extraordinary level of maturity and capability in the last 25 years and when employed as weapon of choice in support of coercive strategies it has proved to be extremely effective. Overall, from an operational perspective we may agree that success will always be down to the joint effort, since air power may suffer from serious situational limitations (COIN, Irregular Warfare). Yet if we move to the strategic level, it does make sense to think of air power as a force really capable of playing a decisive role, thus creating scope for air power-based strategies.

Even the recent events in Syria, where limited coercive military action was envisaged for a while, may confirm that we are at the dawn of a new era of coercive diplomacy which will likely see the adoption of air power-based military strategies (as seen in the 90s). In order to be ready for these new strategic conditions, focusing attention and resources on filling capability gaps will not suffice. Air power capabilities and competencies must be made to fit into a truly holistic approach to warfare. The uncertain extent and severity of coming crises clearly means that some situations might require a land power or a sea power-centered military strategy.

However, I believe that more often than not in the years ahead, political risk-benefit evaluations will lead to the conclusion that air power-based military strategies are the most viable and therefore the most likely option. Yet we must be aware that this option may not necessarily be a short way to achieve political objectives.

Book Reviews

Cyber War Will Not Take Place

By Thomas Rid

Reviewed by Squadron Leader Paul Withers

Introduction

The 2010 Strategic Defence and Security Review classified cyber security as one of the United Kingdom's four 'Tier-One' risks to National Security. The reality of this threat had been acknowledged in the 2009 Cyber Security Strategy, which highlighted the malicious use of cyberspace by '…criminals, terrorists and states, whether for reasons of espionage, influence or even warfare.' The interest in cyber security across government, industry and the media has intensified, not least because under the auspices of the National Cyber Security Programme, it has attracted new money in times of severe austerity. Thomas Rid uses a deliberately provocative title in a volume that aims to bring a little political science rigour to the debate. His argument is supported by the available evidence, which to date suggests that 'Cyber War' is a largely meaningless concept based upon the norms of understanding around the nature of war.

For a cyber act to be classified as war it must at least have the potential to be violent, it must be instrumental in the sense that it is a means to an end, and it must be a part of a wider political purpose. As Rid points out, to date 'not a single human being has been killed or hurt as a result of a code-triggered cyber attack' (p 13). This key point on the potential of computer code to cause death or injury is the basis of the argument against cyber war. Rid's analysis of the publicly available examples that might constitute war finds most of them wanting on the presence of violence. He argues that even those attacks that have the potential to be violent, *'are bound to be violent only indirectly'* (p12).

He sets out his argument, based on a wealth of empirical evidence that all the acts witnessed in cyberspace, rather than being acts of war, belong to one of three categories: *sabotage, espionage or subversion*. After a discussion on the nature of 'cyber weapons', Rid analyses the historical record of cyber attacks across each of his three categories, focussing on *what has happened*, rather than the speculative approach taken by some other authors. In the chapters on sabotage, espionage and subversion, Rid offers the reader a detailed and more nuanced view of numerous historical cyber attacks. He also offers a window on the complex problem of attribution of acts in cyberspace, which he argues is as much a political problem as it is a technical one. He concludes by looking *Beyond Cyber War*, where he identifies the possibilities of cyber operations being more ethical than, for example, an airstrike as 'a cyber attack may be less violent, less traumatizing, and more limited' (p171).

Despite its title, Rid's argument is not dismissive of the role of action in cyberspace as a military instrument or as an instrument of power more generally. If one were to translate his categories of espionage, sabotage and subversion into military parlance, the threats and opportunities of operations in cyberspace become apparent. *Espionage* obviously becomes intelligence; *sabotage* becomes non-kinetic (or potentially even kinetic) effects; and *subversion* could be countered (or enabled) by a complex mix of Information Activities including Media Operations and Information Operations.

This book can be viewed as a useful foil to Richard Clarke and Robert Knake's 'Cyber War: *The Next Threat to National Security and What To Do About It'* (see CAS Reading List 2011). Clarke's bleak outlook stimulated the discussion, but Rid manages to bring clarity to a debate that suffers from excessive hype; indeed in writing the book it is one of the author's stated aims to 'attenuate the hype' (p ix).

Some may be left feeling that perhaps it is the definition of war *per se* that needs readdressing in the modern context. However, whatever your definition of war, it is clear that a Cyber War in its own right still seems extremely unlikely, but that cyberspace, inextricably linked with the physical domains of warfare, is and will remain a part of warfare. If we accept Rid's thesis that *Cyber War Will Not Take Place*, his argument and the underpinning evidence should lead us to the conclusion that operations in cyberspace are very much here to stay.

Much of the extant literature on cyberspace rests around highly technical 'Information Security' topics, but whilst Rid occasionally dips into essential technical explanation, his well-reasoned and extremely readable volume lifts the debate to a level appropriate to the general military audience. As air power's reliance on cyberspace continues to grow, airmen need to understand its threats and opportunities across military operations, including the implications for air power. This excellent book is highly recommended for both the cyber specialist and the general air power audience as a means to help educate and stimulate the debate.

Book Reviews

The Quick and the Dead

By William Waterton

Reviewed by Flight Lieutenant James Brooks

Introduction

Aviation regulatory bodies in the 21st Century are now demanding increasingly greater control with accountability, airworthiness assurance and risk management being underpinned by reliable evidence and proof that every safety related decision is sound. Whether this current culture was born due to past mistakes or increasingly complex technology, it is nevertheless a far distant cry from the apparently relaxed safety culture, which frustrated the author William Waterton, in this auto-biographical account of post war test jet flying with Gloster Aircraft Company. Although originally written in 1956 and out of print for many years, this recently re-published work is as relevant today as it was in 1956.

The Quick and the Dead follows Second World War veteran William Waterton's fascinating professional life as Chief Test Pilot for Gloster Aircraft Company from his point of view, with the apparent objective to highlight that aviation cultures have to change. The book is written as the RAF refused to grant Waterton a permanent commission so he entered the commercial world at a time when the jet age was approaching and the strength of the British aircraft industry was subsiding in favour of American and Russian dominance. This, Waterton argues throughout the book, was largely due to the fall in free enterprise of British aircraft companies. "The Services have received a number of dud designs since the war. Men have died in them" (p87). This sparks articulately detailed examples of how aircraft designers and civil servants failed to cooperate with test pilots; ignoring their concerns and putting them and front line pilots' lives at risk.

However, a key difference to other books in this genre is his involvement as a company commercial representative, flying the globe showing off his aircraft. There are plentiful examples of his exciting endeavours relived with humorous and melancholy moments, which balance well against the technical facets of flying diverse machines and navigating great distances. His interactions and relationships with heads of state, princesses and military chiefs to name a few, add a personal touch to the book as unlike other military men biographies, Waterton does not detail his personal life. Instead of family ties and romantic interludes that often populate similar biographies, Waterton prefers to detail these professional relationships with foreign personalities and also his fellow pilots and bosses. The human touch is also made up for when he explains his emotional turmoil when dealing with unsafe management decisions and peer deaths, which are sadly common themes throughout the book.

Open source searches of Waterton reveal that he was a fearlessly critical man who tested his superiors as well as the aircraft. However, any indications he gives to this in the book are minor in nature compared to the highly proficient manner in which he approached his profession. Criticisms of aircraft, management and himself are all equally supported with ample evidence and a balanced view thereby making his arguments credible and authentic.

A significant observation is that in many ways this book illustrates how Waterton was ahead of his time. As a person, Waterton openly questioned the decisions of his superiors and challenged those who he deemed were ignoring flight safety. The post war culture was not ready for this rebelliousness , and, as a result, his credibility suffered. Nevertheless, it is difficult to disagree with his argument that so many were exercising poor flight safety and displaying an ignorance to risk. Unlike the safety driven culture of today, Waterton states that the"*…results of an investigation are never submitted or released…In the Services, as well as in civil flying, all the information relating to accidents is not made known. I can think of no parallel evasion of the law – a cause of death being kept hush-hush*" (p182). His account leads the reader to believe that he was a lone voice, concerned with the potential impact of having such an undisciplined culture. Furthermore, he also repetitively highlights the importance of the competence of pilots, designers and engineers as well as oversight of activities and assurance methods in order to confirm that individuals and organizations are doing what they were asked to do. These are key themes of how aviation is managed today in both the military and civilian environment, which will lead the reader to realise the significant legacy he has left behind. Indeed it could be argued that the British military aviation environment failed to learn from the lessons identified in this book until the Nimrod disaster of 2006. Now it is post 2006 and the formation of the Military Aviation Authority has been established it would appear that Waterton's legacy now flourishes with the competence of pilots, designers and engineers being recorded, scrutinised and reviewed as he may have wanted.

Waterton's writing style also provides something which numerous other military test pilot authors do not. Exhilarating accounts such as *Chuck Yeagar: An Autobiography* provide plentiful testimonies of how he performed valiant achievements including breaking the speed barrier

despite having cracked ribs and copious fun times with drunken flying buddies. Aviation detail is high in many flight test books so would therefore only satisfy the keenest aviation enthusiast. However Waterton's writing style is simpler than most with limited acronyms and specialist language yet he provides enough detail for the enthusiast to benefit. As a result, he expertly opens up the reader access significantly compared to many other military books, and as a result *The Quick and The Dead* would be a pleasant read for anyone, whether in the business of military aviation or not. The book is however expected to be especially interesting to those involved in contemporary flight safety, airworthiness and related subjects. Whether there is a commercial drive to satisfy customers or operational drive to fly more hours, modern aviation questioning and learning cultures are very different compared to Waterton's world. Instead of aircraft being pushed to the production line before the test pilot is content that it is safe to fly, today Waterton would have had a greater influence on aircraft safety records. Equally, however, he would also be only one of a team of test and evaluation, operational and public relations staff in the modern age; losing his freedom that he so enjoyed back then. The book is therefore of great relevance to the modern reader. It is a reminder of what our world could be like if we loosen our grip on aviation safety. Regulation may slow us down and may erode the amount of output military personnel strive for, however *The Quick and the Dead* is a judicious account of what could happen if we ignore these constraints, especially at a time where the cultural acceptance threshold for military deaths is ever decreasing.

The book does not however take away the romantic heroism that so many pilots such as Waterton demonstrated in this new era of fast jet testing. This book will excite and, for most readers, generate empathy with the author. He, like others, put their life on the line in the interest of others and in some cases it is only more recently that we are learning from the mistakes he was desperately trying to avoid.

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