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***Will the Effectiveness of Precision Weapons in the Future be
Influenced by their Successful Employment in the Past?***

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Abstract

Throughout history mankind has persistently searched for methods with which to apply force with more accuracy. However, how perfect will a precision weapon system need to be before it can be perfected no more? Seeking perfection has enabled an altogether more clinical approach in the application of destructive force. But the International community is becoming less tolerant over the use of lethal force and expects only success, which it will judge for itself through extensive media reporting. Equally, collateral damage caused by precision weapons is inexcusable, resulting in widespread International condemnation, in a world where global opinion influences political decision making. Wars of choice are likely to be fought in ever more complex and congested environments, against adversaries with differing ethical values.¹ The technology advantages that precision has enjoyed in past conflicts are being eroded away, questioning their future effectiveness. This is being conducted in front of an increasingly influential, globalised, media-based audience. A retired US Marines Officer stated that “the only wars the US has ever lost was against unconventional enemies using worse technology”.²

¹ United Kingdom. HM Government. A Strong Britain in an Age of Uncertainty: The National Security Strategy. (Norwich: TSO, 2010), 18.

² P W Singer, *Wired for War; The robotics revolution and conflict in the 21st century*, (NY: Penguin group, 2009), 213.

Introduction

The sudden advancement of precision weapons during and immediately after the Vietnam War was heralded as a Revolution in Military Affairs (RMA).³ The ability to apply precision effect has evolved from a 1 in 100,000 chance of hitting a soldier with a rifle in the American Civil War to hitting a 20ft target with a 2000lb bomb delivered from 15,000ft, at night.⁴ Although the environments described are different, the technological advancements are clear and their impact on warfare equally revolutionary. Arthur C Clarke offered the opinion that “Sufficiently advanced technology is indistinguishable from magic.”⁵ When this is perceived as being so, it is necessary for those adversaries without the magic to exploit those who have it; by influencing global opinion in what lies behind the trick. Where counters to technology are not readily available unconventional methods will be sought, often exploring or breaking the recognised boundaries of the ethics and laws that govern warfare. The German political scientist Herfried Munkler questioned whether it is even ethical of modern states to use such technology against those who do not have it.⁶

This essay will analyse whether the successful employment of precision weapons in the past has influenced their potential effectiveness in the future. It will argue that whilst precision weapons can achieve results that can have strategic effect in warfare, the continual technological development and governance process for employment, presents significant weaknesses in their ability to deliver effect in future conflicts. Also, that as the use of precision weapons by modernised states comes under greater scrutiny in the public domain (due to globalisation) the political will to take risk on collateral damage is exponentially decreasing. It will demonstrate that due to the congested, cluttered, contested, connected and constrained characteristics of the future battlespace,⁷ there will be an increasing requirement on ground forces to provide clarity and distinction between combatants and non-combatants.

The first section will provide context by examining the environment in which precision weapons are most likely to be employed, as defined by the Future Contemporary Operating Environment (FCOE) in UK doctrine.⁸ The second section will examine the development of precision weapons and question why such technology came to be in such high demand, and now represents the only acceptable method of delivering air launched munitions. Third, influencing factors will be

³ Paul G Gillespie, “Precision Guided Munitions: Constructing a Bomb More Potent than the A-Bomb,” (Air Force Institute of Technology, Wright-Patterson AFB, 2002), 5.

⁴ Fred Barnaby, *The Automated Battlefield*, (Letchworth, Herts: Sidgwick and Jackson Ltd, 1986), 14.

⁵ David Wetham, “Killer Drones,” *The RUSI Journal* (Jun 2013): 27. doi: 10.1080/03071847.2013.807582, (accessed 27 Nov 2013).

⁶ *Ibid.*, 28.

⁷ United Kingdom. Developments, Concepts and Doctrine Centre. *Strategic Trends Programme, Future Character of Conflict*. (Shrivenham: DCDC, 2010), 21.

⁸ *Ibid.*, 20-25.

considered in order to explore how the historical use and success of precision weapons has evolved and contributed to conspire against their viability in future conflicts. They will be used to shape the argument and demonstrate that the historical images of aerial bombing campaigns have had a dramatic effect on influencing the requirement for precision weapon application. It will concentrate on examining the three interlinked factors of political restraints, global opinion and the governance of warfare.

The political section will analyse how government direction controls the use of lethal force employed by the military and why it affects precision weapon employment. The global opinion section will demonstrate how globalisation and recent conflicts are now powerful tools for exploitation by an adversary, in order to further influence and restrict the employment of lethal force. Lastly, governing and ethical constraints will be examined to highlight how ethical laws govern global opinion and influence the political restrictions placed on military forces. The focus of the influencing factors section will be on how the prevention of collateral damage, whilst still achieving the required effect, is the most powerful area for exploitation. Finally, in order to reinforce the argument and draw conclusions, some key features of precision weapons will be examined against their ability to deliver the desired effect in the FCOE.

Although the employment of precision weapons is applicable through all environments this essay will focus primarily on the Air environment, where the most advances in technology have been made. It will focus on the period between 2000⁹ and the present day, reflecting adversaries out to 2030 as described within the UK Strategic Trends Programme.¹⁰ During the first Gulf War 7% of the air weapons delivered were precision, in the second Gulf War it raised to 70%, in Libya and now in Afghanistan it is 100%.¹¹ With such widespread global recognition for their acclaimed ability to clinically wage war, is it likely that the dumb bomb will remain part of history; as now nothing short of perfection is what is expected.

Future Contemporary Operating Environment

UK doctrine is being shaped to ensure that the future environment in which conflict is likely to occur, is fully understood and its armed forces appropriately configured and equipped. The Future Character of Conflict describes a cluttered and congested environment in which distinguishing an adversary and applying a proportional response, whilst negating collateral damage, will be increasingly more difficult.

⁹ Although precision technology is still developing, the major breakthroughs in accuracy, through either Global Positioning System (GPS) or Laser designation, had occurred by 2000.

¹⁰ United Kingdom, DCDC, *Strategic Trends Programme, Future Character of Conflict*, 30.

¹¹ Singer, *Wired for War; The robotics revolution and conflict in the 21st century*, 61.

The current UK definition of the contemporary operating environment is,

“...a complex web of participants and bystanders that influence operations. It is not always possible to focus on a defined adversary...and it is widely accepted that military operations do not conform to a neat spectrum of conditions...”¹²

Precision capabilities have been utilised widely since their development in the 1970's and their performance continually tested against ever more difficult target sets. They were employed against bridges in the Vietnam War, command and control bunkers during the First Gulf War and now in Afghanistan against key adversary leadership figures, identified as High Value Individuals. In order to make an assessment against their future effectiveness in the contemporary environment, we must first understand what it will look like. This section will provide the context with which the essay will make that assessment against by exploring the characteristics of the environment.

UK doctrine describes the future battlespace as being an altogether more chaotic and diverse environment than we have experienced in previous conflicts. A State on State conflict, against a major power, is deemed as possible but unlikely in the 2030 timeframe.¹³ The most likely adversary we are going to face is one who will not be able to match either the technological capabilities or size of forces generated by modern western militaries. It is against this adversary and in this environment that the effectiveness of precision weapons will be expected to perform and be judged against.

Congested battlespace will consist of environments that are heavily populated, seas that are choked with vessels and airspace that lacks timely clarity. In order to employ lethal force in this domain, a critical requirement will be the ability to discriminate between those targets that are legitimate and those that are not; as well as being proportional to prevent unintended collateral damage. The expansion of warfare into the cyber domain will also allow adversaries to become harder to locate and even harder to have kinetic effect against. Weapons will need to be increasingly more non-kinetic in their delivery of effectiveness. A cluttered and congested environment will suit the modern adversary and strengthen its ability to achieve objectives through exploitation. The ways of combatting such a difficult threat will require an in depth understanding of the environment that is unlikely to be fully gained from stand-off capabilities. The interconnectedness of the modern world allows the exploitation of a wider audience and can only be fought by a counter balancing argument, not with kinetic force.¹⁴

¹² United Kingdom. Developments, Concepts and Doctrine Centre. British Defence Doctrine Publication 3-00. 2nd ed. (Shrivenham: DCDC, 2004), 1-11.

¹³ United Kingdom, DCDC, *Strategic Trends Programme, Future Character of Conflict*, 2.

¹⁴ *Ibid.*, 21 - 25.

UK doctrine further identifies that future conflict against a State actor is possible, but only likely as part of a coalition. This will still present challenges to the effectiveness of precision to operate in a domain of urban clutter, but is likely to be against a more conventional adversary utilising more familiar target sets.¹⁵ It is probable that an adversary of this nature will possess the knowledge of how to defend against precision effects. Advanced methods of precision denial, such as GPS jamming, are likely to be common place. If air delivered precision effect is to be successful in this environment, it will need to continue to develop and find robust countermeasures to remain relevant, whilst having an effect which is deemed acceptable.

Precision weapon development

Since its inception, Air Power and its employment of precision weapons has been heralded as the answer to modern warfare. This section will highlight the significant advances made in precision weapons and demonstrate why precision has evolved to become the only acceptable solution in the delivery of kinetic air effect.

The use of precision airpower has been questioned from as early as WWII, whether it be for strategic bombing, as Trenchard advocated for “maximum moral effect”,¹⁶ or for tactical support on the battlefield. It was found that during WWII a 3 degree heading change at bomb release would change the impact point by 600ft, and a 5mph change in speed caused a range error of over 100ft.¹⁷ With that degree of accuracy the weapon efforts required to hit a target the size of a small house was calculated at 4500 bombers and 9000 tons of weapons.¹⁸ The oil refinery in Leuna, Germany was consistently attacked by the allies and only 2.2% of bombs impacted in the production area during 22 attacks conducted by large bomber formations; it was only put off commission in the last year of the War.¹⁹ The ability to deliver weapons accurately not only had grave moral and ethical consequences for governments, but also required additional military effort and exposed more crews to increased risk. The need to develop better accuracy in bombing led to several programmes being embarked upon, including the allied Azon bomb and the German Fritz X bomb.²⁰ After WWII the drive to further develop precision bombing fell away, as the world entered the Nuclear age and with it the Cold War.

¹⁵ United Kingdom, DCDC, *Strategic Trends Programme, Future Character of Conflict*, 30.

¹⁶ Scott Murray, “The Moral and Ethical Implications of Precision Guided Munitions”, (Air University Maxwell AFB, School of advanced Air and Space Studies, 2003): 11.

¹⁷ Gillespie, “Precision Guided Munitions: Constructing a Bomb More Potent than the A-Bomb.”: 45.

¹⁸ G Bagwell, “Precision Weapons-Considerations for their Employment (or what the weapons manual doesn’t tell you)”, Air Power Review Volume 2, number 1 Spring 1999: 2.

¹⁹ Ibid.

²⁰ The Azon and Fritz X bombs were both radio controlled and achieved limited successes against bridges in Burma and support to naval operations respectively.

The Vietnam War highlighted the significant shortfalls in conventional bombing techniques, with an estimated 50,000 rounds being required to kill one adversary.²¹ The Thanh Hoa Bridge in North Vietnam had 2000 tons of weapons dropped on it during 873 sorties and remained standing. The lack of progress in achieving military objectives, excessive cost and exposure of crews to repeated risks drove a requirement for a more effective delivery method. The bridge was finally destroyed using Laser Guided Bombs (LGB) on 27 Apr 1972 after only 8 sorties, flown on single mission.²² Such was the success of LGBs against the wider campaign targeting plan, that 95% of the targets selected for Operation Linebacker²³ were called forward early and struck prior to the planned operation commencement date.²⁴ That same year, the production of 2000 guidance kits per month for dumb bomb conversion, were demanded from the manufacturer.²⁵ The guided munition was beginning to be heavily relied upon to achieve military objectives and raised the question of why you would consider using anything else. However, the precision deep strike targeting in Vietnam unquestionably achieved military success, but operations were not unduly restricted by ethical considerations. It is questionable whether this approach would survive the global condemnation that would be likely today, in what was a war of choice.

The demise of the cold war and a changing new battlespace drove a requirement for weapons that were both discriminate and accurate, reinvigorating precision development. Military forces began to posture and consider their ability to fight a limited war,²⁶ highlighting precision requirements for lower yield and less collateral damage. Clausewitz defines war as “an extension of politics by violent means”.²⁷ This direct linkage to politics drives the governing methodology of targeting that commanders must operate under. At the start of the Gulf War in 1991 precision bombs were doctrinally considered against deep strike targets. However, the sheer volume of adversary armour could not be destroyed by the more traditional A10s and Apache helicopters. In order to sway the balance, LGBs were utilised and achieved resounding success. The media coverage was vast and LGBs became the weapon of choice for US policy makers in the new way of conducting a Humane War.²⁸ Precision weapons became a means of global audience participation in how clinical and acceptable warfare was conducted. With it also came a requirement to manage their expectations of success. This was perhaps the tipping point, when military successes with precision weapons began to unduly restrict its effectiveness, due to the increased involvement and influence of the political and global opinion domains. The understanding that precision can

²¹ Singer, *Wired for War; The robotics revolution and conflict in the 21st century*, 394.

²² Barnaby, *The Automated Battlefield*, 14.

²³ Operation Linebacker was the US air interdiction campaign flown against North Korea from 9 May to 23 October 1972.

²⁴ Gillespie, “Precision Guided Munitions: Constructing a Bomb More Potent than the A-Bomb”, 170.

²⁵ *Ibid.*

²⁶ In reality most wars are limited to a degree by politics or governance and the concept of total war is very much theoretical.

²⁷ Murray, “The Moral and Ethical Implications of Precision Guided Munitions”, 21.

²⁸ Gillespie. “Precision Guided Munitions: Constructing a Bomb More Potent than the A-Bomb”, 181,182.

achieve strategic success as easily as it can failure, was the moment that the genie escaped from the bottle.

The Joint Direct Attack Munition (JDAM) was introduced during Operation Allied Force, employing Global Positioning System guidance and the ability to engage targets in all weathers. The modern day precision inventory is one that now has the ability to apply precision strikes around the globe in all weathers, day or night. It is, therefore, with little wonder that the first solution considered by politicians when faced with the risk of conflict is whether or not the required endstate can be met by air alone.

Advances in technology have kept pace with the increasing demand for accuracy in the employment of weapons during times of conflict, but with it comes cost and a requirement to manage global perception of what weapons can and cannot do. Precision has developed from radio controlled bombing to all weather bombing. Although accuracy is important, it is the warhead and the reliance on intelligence that enables the effects of precision to be realised. All three are linked to the Collateral Damage Estimation (CDE) process that must be satisfied if the weapon is to be utilised. It is in this area that technology will need to focus as the drive to minimising collateral damage continues to increase and ultimately govern the use of any lethal force.

The successes gained in the employment of precision weapons have left the dumb (unguided) bomb redundant and it no longer exists in the UK inventory. On the basis of achievement, it is difficult to argue against the use of precision over non-precision, but its very success now leaves air forces without the option. Such was the outstanding performance of LGBs in the Vietnam War that their usage was likened to “When you have a new hammer, everything looks like a nail.”²⁹ Indeed, precision weapons are now becoming the only acceptable method in delivering lethal force by Air.

Influencing Factors (constraints)

This section will consider how the three most influential areas of governance strengthen the case for the use of precision weapons and how, at times, weaken their effectiveness. It will explore the domains of global opinion, political and ethical to demonstrate that the strengths of precision to deliver success have also weakened its potential in future conflict. The three domains have been identified as all are intrinsically linked to one another. Global opinion now exerts significant influence on a state population, and is increasingly more accessible through advances in globalisation. The political domain is the source of state power and is given through the support of its people. Global opinion can be driven by its perception of what is right and what is wrong, the

²⁹ Gillespie, “Precision Guided Munitions: Constructing a Bomb More Potent than the A-Bomb”, 167.

governance and ethics of warfare. Therefore, how these three domains interact and influence is key in understanding the effectiveness that precision weapons may deliver in the FCOE.

Growth of global opinion in use of lethal force

Public perception and opinion has evolved into being a key driving force behind the political governance in the use of precision weapons; and is, in part, responsible for weakening its effectiveness. The acceleration in precision technology during the 1990's was coincident with the rapid onset of globalisation. Complete access of up to date news and all the latest video footage of a precision weapons last moments before target impact, became available to all. The publicising of weapons footage assisted in demonstrating the constraints militaries were taking against needless damage when conducting warfare; but it also assisted in dehumanising conflict and killing by making it appear to be a clinically contained procedure.

Global opinion is fuelled by the media and the more technical the ability to wage war becomes, the greater the interest generated. Governments seek to justify their actions in conducting warfare to the civilian population, and the media often becomes recognised as a tool to convey such Just actions. The rise in media coverage was demonstrated during the First Gulf War when there were 158 journalists covering the operation as it unfolded, in comparison to just 29 during the Falklands War in 1982.³⁰ Unfortunately, media coverage can cause the loss of public support for military action just as easily as it can gain it. The exposure given to a conflict is often something that governments have limited input into and any potential damage is done as soon as the narrative is released, whether it is true or not. Images of civilian casualties that have emerged from the lawful prosecution of military targets lessen the appetite to take such destructive action in the first place. Such is the strategic effect of collateral damage it must now be managed as a risk that could, at worst, lose the war.

Perhaps the two most significant media stories during Operation Allied Force were the bombing of the Grdelica Rail Bridge in Apr 99 whilst a train was crossing, and the inaccurate targeting that resulted in a strike on the Chinese embassy in Belgrade on 7 May 99.³¹ In Afghanistan on 5 Nov 2008 an Afghan wedding party on board a bus was struck by a US precision weapon in Wech Baghtu, Kandahar province, killing up to 63 people.³² These are not isolated cases and highlight the importance of managing expectations of what precision weapons can do and not necessarily always glorifying the successful results. It also highlights the critical reliance that precision has on

³⁰ Philip McEvoy, "Law at the Operational Level," in *Ethics Law and Military Operations*, ed. David Whetham (Basingstoke, UK: Palgrave MacMillan, 2011), 126.

³¹ C Finn, "The Broader Implications of the Increasing use of precision weapons", *Air Power Review* Volume 4, number 1 Spring 2001: 71.

³² Wetham, "Killer Drones", 27.

understanding the environment through the collection of intelligence. Mistakes do happen and when they do, it is still a violent and lethal effect that will occur wherever the weapon impacts. After Operation Allied Force General Short observed “I don’t wish to be impertinent but I don’t think most of our civilian leadership generally understands air power or how it should be employed. Their exposure to it has been films of the Gulf War which look much like a video game”.³³

When precision weapons are utilised, public perception is that precision means no civilian casualties. If you are able to apply a weapon precisely and in doing so you kill civilians, then you must have set out to do so. As a reliance on intelligence is a critical path to precision effect, what confidence in its accuracy is required before lethal force can be authorised? In addition, with the possibility of strategic impact, if and when mistakes occur, the appetite to take risk is decreasing. This has the effect of increasing the requirement to gain better intelligence, further restricting precision employment and allowing greater exploitation opportunities for adversaries. What is not widely understood is that errors can still occur whilst employing precision weapons and civilian casualties will remain a part of modern warfare. Without an acceptance of that fact, there will continue to be influence into the political domain and a corresponding tightening of precision governance, weakening their overall effectiveness. The public domain can also be exploited by adversaries to influence the restrictions placed on weapons employment, in an attempt to reduce the technological disadvantages faced. Whilst support and opinion assists as a driving force behind the development of precision technology, it can also restrict its employment to such an extent that the advantage it brings is neutralised.

Political restrictions

Political restrictions will be considered to demonstrate the powerful relationship between the public and political domains, which govern the use of lethal force in every campaign to a lesser or greater degree. This linkage has a direct impact on how precision is employed and, therefore, whether or not it will achieve the required effectiveness. Where public opinion provides support for an elected government and opinion is influenced by military action, political restraints will always be a part of military operations. During the 2006 Israeli-Hezbollah War retired Israeli Major General Yoram Yair considered that Israel had done “tremendous damage to its reputation as a result of the large number of Lebanese civilians killed and wounded by the shelling”.³⁴ A reporter also commented that “Certain Israeli actions were serious mistakes, including the massive use of inaccurate cluster bombs... that were largely ineffective and counterproductive... in a war where public opinion

³³ Lieutenant General Michael Short was the appointed NATO Joint Air Force Component Commander during Operation Allied Force over Kosovo.

³⁴ William Arkin, *Divining Victory, Airpower in the 2006 Israel-Hezbollah War*, (Alabama: Books Express Publishing, 2010), 77.

counts as much as actual military manoeuvres.”³⁵ The modern world society is much less tolerant of lethal force being utilised by a state to achieve its aims and this in itself imposes a severe restriction on weapons employment. Governments will only maintain their power if they do the bidding of the population that they govern. Precision’s ability to apply accurate destructive force necessitates its proportionality to be very carefully judged, to avoid global condemnation.

In the UK, political constraints on the employment of lethal force are prescribed through a targeting directive³⁶ specific to each theatre in which military operations are being conducted. The directive contains strict guidance on not only when lethal force may be used, but also in what circumstances and with what level of acceptable collateral damage. It reflects the political restraints imposed on the appointed military commanders with which they may engage in lethal action. The process of target selection and engagement is orchestrated to ensure that every target struck can be intrinsically linked to the political aim and satisfies legitimacy; otherwise it constitutes nothing more than needless violence. What is also assured is the involvement of the political domain stretching across all three levels of warfare and allows the political sway to enter and, at times, unnecessarily restrict military activity.

Due to the perception of what precision can and cannot achieve, it receives an altogether different level of scrutiny and demands a more rigid and inflexible means of control. This methodology assures that lethal force is being employed legally and within the political constraints dictated. It is driven by what modern societies see as being acceptable and it is, therefore, global opinion that influences political governance. These increasingly more restrictive constraints placed on precision employment, limit a commander’s freedom of action, and allow the exploitation of time and space by an adversary. The successes that precision weapons have enjoyed now drive the governing restraints bounding its employment, weakening the overall effectiveness.

Governing and Ethical Constraints

This section will analyse the governance of war through the Law of Armed Conflict (LOAC) and how warfare has, and is becoming, increasingly ethically asymmetric. The ability to minimise collateral damage and improve military effect with precision accuracy, has driven further economic investment for research and development. However, the quest for perfection has also resulted in a tightening of the rules and laws that govern their employment, as more is expected from them. The question will be is there a point when they are no longer viable, as the restrictions for their employment outweigh the advantages they bring. In either case, in order to survive, the adversary against technology must develop new ways in which to succeed and level the playing field. The

³⁵ Arkin, *Divining Victory, Airpower in the 2006 Israel-Hezbollah War*, 71.

³⁶ The UK targeting directives are staffed and issued from PJHQ to deployed UK Forces.

ability to successfully do this will directly impact on the effectiveness of precision weapons and their viability in the FCOE.

The rapid advances in technology have far outstripped any impetus to re-examine the rules that govern modern warfare. A former UK Chief of Defence Staff, Lord Boyce, said “The Armed Forces are under siegeThey are being pushed by people not schooled in operations but only in political correctness. They are being pushed at a time where they will fail...tortuous rules not relevant to fighting...by those who have no concept of what is required to fight and win.”³⁷ Although the basic principles of proportionality and discrimination should still be the basis for the employment of lethal force, they also must be considered against the newly emerging adversary, who pays little heed to such governance. Precision weapons provide the ability, if supported with accurate intelligence, to be discriminate as well as being proportional with effect. The former UK Secretary of State for Defence, Dr John Reid, said on 3 Apr 2006, “I believe we now need to consider whether we, the International community, in its weirdest sense need to re-examine these conventions. If we do not we risk continuing to fight 21st century conflict with 20th century rules.”³⁸ This statement highlights that unless technology has the necessary freedoms in governance to perform, it will become increasingly difficult to justify its cost and weaken the requirement to possess such technology. Precision should result in more freedom of employment, due to its ability to minimise collateral damage, but old rules remain unchanged. In fact, due to its own successes, its occasional failures are highlighted and create further restrictions on employment.

The FCOE is one in which we will face an adversary who does not play by the rules of ethics and is content to target non-combatants. Asymmetric warfare in a confused and congested battlespace now encompasses ethical, as well as environment and weapons technology differences. In basketball a team that deliberately places the opposite team in a position when it can do nothing except foul is called “drawing the foul”;³⁹ that is what we are faced with today. The combat environment can be shaped by an insurgency to prevent an adversary from acting without contravening the jus in bello rules of warfare.⁴⁰ Rules that govern precision employment are exploited through the utilisation of the civilian population and infrastructure within which to hide and fight battles, eroding precision effectiveness.

The Yugoslav government accused the coalition partners during Op Allied Force of causing between 1200 and 5700 civilians, although coalition figures were closer to 500. Out of 10,418 strikes conducted, less than 1% caused civilian casualties; Defence Secretary John Hamre

³⁷ Lord Boyce in McEvoy, “Law at the Operational Level,” 113.

³⁸ Ibid., 114.

³⁹ David Whetham, “Ethics Law and Conflict,” in *Ethics Law and Military Operations*, ed. David Whetham (Basingstoke, UK: Palgrave MacMillan, 2011), 18.

⁴⁰ Jus in bello is the set of laws that govern how war is conducted. Its main principles are discrimination and proportionality. Discrimination describes what constitutes a legitimate target and proportionality details what is considered a morally acceptable amount of force.

attributed only 10 occasions of collateral damage being caused.⁴¹ Even with such relatively low figures, considerably more media coverage was given to the collateral damage caused by NATO airstrikes during Kosovo 1999 than the ethnic cleansing atrocities being conducted by the Serbian forces of Milosevic.⁴² The increased international pressure levied against technologically equipped forces not only creates further appetite to continue searching for a perfect precision weapon, but also places tighter constraints on the application of lethal force. This becomes the Precision Guided Munition (PGM) paradox, the more they succeed the more that is expected of them; or put another way the more their failures are accentuated.⁴³

In the first Gulf War the US attack against the legitimate target of the Al Firdos C2 bunker caused outcry in the global media over how it killed 400 civilians and thus halted the bombing campaign against Baghdad for 10 days.⁴⁴ Although this example is not one of drawing a foul it serves to demonstrate the strategic impact that precision effect can deliver when collateral damage is sustained. If there is no governance over the excessive use of technology vice overall effect, then the idea of drawing the foul will continue to be pursued. Therefore, one may deduce that as long as we continue to pursue advances in technology, an adversary will continue to find ways to draw the foul. When a foul occurs, global opinion will demand for assurance of it not reoccurring, which will in turn further restrict the application of precision effectiveness. It may be that at some point the restrictions applied will negate any advantage that precision delivered in the first place.

As well as international law there also exists the unwritten book of what is ethically correct during conflict. Now that the capability to deliver precision effects is so widely understood and utilised, is conflict better placed with it, or without it; and now that it is here, is it ethically correct to do anything else? The consequentialist approach would describe that doing something that affects a few for the benefit of the many is justified. In WWII President Truman authorised the release of atomic weapons on the Japanese population and justified the loss of civilian life against the consequences of the War continuing. If that is applied to Afghanistan, would it be ethically correct to accept the loss of innocent lives in order to ensure the end of the insurgency? That is to say, would employing a more unethical approach in the acceptance of collateral damage be acceptable, if it brought about a quicker cessation of the long term suffering currently endured within the country? The deontology theory differs in view, stating that if something is wrong, it is wrong and should not be conducted.⁴⁵

⁴¹ Finn, "The Broader Implications of the Increasing use of precision weapons", 38.

⁴² *Ibid.*, 37.

⁴³ *Ibid.*, 55.

⁴⁴ Gillespie, "Precision Guided Munitions: Constructing a Bomb More Potent than the A-Bomb", 228.

⁴⁵ Whetham, "Ethics Law and Military Operations," 13,14.

The increased reliance on precision effect to conduct warfare, whilst minimising collateral damage, follows the deontological view and is gradually becoming the only globally acceptable method to use. The FCOE is likely to contain adversaries operating with a consequentialist viewpoint; which already begins to balance the technology disadvantages. At what point, if ever, is it acceptable to revert to a consequentialist view; is it in counter insurgency, limited war or perhaps only when facing state survival. In this sense, the advancement of precision weapons has deepened the unacceptability of collateral damage in warfare that does not involve state survival, further questioning the effectiveness of precision in the FCOE. If precision is to remain effective in this environment, it must continue to deliver acceptable success whilst continuing to be subjected to close scrutiny and further restrictions on usage; perhaps to the point when its effectiveness is outweighed by cost and risk of strategic failure.

When analysed in the context of state-on-state warfare, the idea of due regard for fair play and abiding by the rules raises further questions. Where one side is technologically more advanced than the other and employs precision weapons, it must and will do everything possible to avoid collateral damage. The state without an ability to employ precision weapons will also do everything it can to avoid collateral damage, but will not be able to if it wants to achieve the desired military objectives. Although collateral damage will be caused, can the state be blamed for not being able to further minimise casualties when it does not possess the technology to do so? In this instance the advantages that precision bring may be neutralised by a technologically inferior force, as they are not constrained by the same restrictive governance.

In the pursuance of negating collateral damage, are we approaching another tipping point when a non-lethal warhead is a critical requirement for precision to have a globally acceptable effect, whilst still delivering military advantage. Editor of *Bombing Civilians*, Yuki Tanaka, follows a deontological viewpoint and questions how anyone can attempt to justify the collateral damage effects of precision bombing; the killing of civilians is a “crime against humanity” and should be treated as such.⁴⁶ If this viewpoint becomes more widely accepted then the governing restrictions that have made precision effect so desirable, will narrow to the point where it will also become unacceptable or unusable in anything except state survival; unless delivering non-lethal effect. It follows, therefore, that the type of war being fought is likely to drive what is right and what is wrong. This indicates a reversion to the consequentialist viewpoint, but only when there is no other option. As conflict in the FCOE is likely to be a war of choice, vice state survival, does this further negate the effectiveness of precision weapons?

⁴⁶ Yuki Tanaka, Marilyn B Young eds, *Bombing Civilians*, (New York: The New Press, 2009), 7.

Key Features in the Delivery of Effectiveness

The ability of precision effectiveness to deliver success in the contemporary operating environment will be questioned by examining its key features, requirements and restrictions using historical conflicts. The Accuracy and Intelligence sections will highlight that whilst precision effect can have an enormous impact on an adversary it has significant limitations and requirements in order to deliver success. Next, will question why the warhead of a precision weapon and its consideration for employment in congested areas, is where the future of precision success will lie. Finally, the LOAC and Expectations sections will reinforce earlier arguments and demonstrate how these two key features of precision employment are the driving factors in the effectiveness of precision in the FCOE.

In order to provide contrasting views, two historical examples will be used that possess similar characteristics to what is expected in future conflicts, as described in UK doctrine.⁴⁷ The first is the 2006 Israeli-Hezbollah War and the second is the 2011 Libyan Civil War, Operation Unified Protector (OUP). Both these conflicts contained adversaries with asymmetric differences in technology, ethical values and mass of force. They also received differing accolades from the global audience that followed their conduct. The Libyan intervention was conducted by the coalition as a war of choice, but arguably the Israeli's considered the 2006 War to be one of survival against the Arab world. Other historical examples will only be used by exception to reinforce a point of view.

Accuracy

Implicit in its name, the greatest strength of a precision weapon is accuracy, but its weakness is the reliance on the positional information of the target. As modern warfare has migrated away from the Cold War vision of open battlefields into the complex and congested urban environment, a weapon that does not land where expected causes more damage than not conducting a strike at all. During OUP, NATO led air operations were flown to enforce the UNSCR 1973; which authorised the use of force to protect the civilian population. The global media focused heavily on the ability of the coalition force to minimise any risk to civilians whilst enabling an end to their suffering. During the operation 26,000 sorties were flown and 7600 air launched munitions were dropped on 6000 targets.⁴⁸ A significant proportion of the targets engaged were in urban areas but civilian casualties were estimated to be as low as 72.⁴⁹ Coalition air power reversed the

⁴⁷ United Kingdom, DCDC, *Strategic Trends Programme, Future Character of Conflict*, 21-25.

⁴⁸ Douglas Barrie, "Libya's Lessons: The Air Campaign, Survival: Global Politics and Strategy," Routledge (2012): 58. Doi: 10.1080/00396338.2012.749629, (accessed on 20 Feb 2014).

⁴⁹ *Ibid.*, 61.

advantages, of both mass and technology, held by the Libyan regime forces within 3 months, and enabled their removal from power within 7 ½ months. The results achieved from air delivered precision assisted in enabling the protection of civilians through dynamic targeting and the removal of the Gaddafi regime from power.

The impressive results demonstrate the immense strengths and effectiveness of precision in this environment, but they also hide the vast dependency requirements from Intelligence, Surveillance and Reconnaissance (ISR) assets. The coalition force relied solely on the US provision of 85% of the ISR platforms and supporting analysts, to enable the level of intelligence collection required to deliver the precision effects of OUP.⁵⁰ This highlights the enormous support requirements to deliver precision effectiveness and the reliance placed on the ownership of costly collection technology. Without ISR, precision effectiveness would have been significantly different. The uncontested Air domain in Libya enabled unrestricted ISR collection and the lack of anti-precision technology meant little impact on weapons success. If the FCOE is contested or contains anti-precision technology then its effectiveness will be considerably different.

During the 2006 Israeli-Hezbollah War, the symbolic strike against Beirut International airport with four 2000lb class PGMs on the runway intersections prevented aircraft operations without civilian casualties.⁵¹ The accuracy of Israeli precision was further demonstrated in the destruction of 71 bridges in Lebanon, including every bridge on the Litani River. Although this exemplifies the unparalleled strength of accuracy it met with widespread condemnation, including that of Kofi Annan who stated Israel was responsible for the “excessive use of force.”⁵² In this case, the effectiveness of precision was kinetically very good, but it also significantly damaged the Israeli standing within the international community.

Employing weapons with such accuracy delivers economy of effort to achieve military objectives, acts as a force multiplier and allows planners to consider a more asymmetric approach to targeting. A balance of accuracy and warhead size allows a decreased requirement for weapons to be delivered in order to achieve the desired effects. This not only reduces costs, but decreases the amount of aircraft and crews that are placed at risk to achieve the same effect. What it can also demonstrate, in the case of the Israelis, is the significant technological superiority of one side; which leads to the questioning of proportionality of response. It also prompts very close scrutiny of the chosen target sets and stimulates unforgiving global opinion when weapons of such accuracy cause collateral damage; as surely that must be avoidable.

⁵⁰ Rue Romao, “Targeting and Adaptation in Combat: Examining the Libya Case”, *Baltic Security & Defence Review Vol 15, Issue 1 (2013)*: 15.

⁵¹ There were reports of 27 civilians killed but it was clarified later that these deaths were unrelated to the airport strike by Lebanese police.

⁵² Benjamin S Lambeth, *Air Operations in Israel’s War Against Hezbollah*, (Santa Monica, CA: Rand corporation, 2011), 176.

Reliance on Accurate Intelligence

The collection of accurate and timely intelligence is a critical component in the employment of precision effect; without it there is no precision. One of the principles of modern targeting is distinction and “attacks should be limited to combatants and other military objectives; the civilian population and civilian objects must not be made a target of attack (the principle of distinction).”⁵³ Having accurate intelligence is not only a costly and timely process but it is also one that can be influenced and exploited by an adversary.

Israel’s response against Hezbollah, after the kidnapping of its soldiers, was rapid and achievable only due to accurate intelligence. Within hours it targeted the majority of the Iranian Zilzal long range rockets capable of hitting Tel Aviv; reports put the numbers at anything between 20 and 60 launchers.⁵⁴ Conversely, the Lebanese government claimed in excess of 130,000 dwelling units were destroyed or damaged in Israel’s quest to defeat Hezbollah.⁵⁵ In 34 days Israeli aircraft flew 15,000 sorties and released 162,000 weapons.⁵⁶ A UN fact finding report accused Israel of not distinguishing military targets from civilian targets during the war.⁵⁷ In November 2006 a UN Commission of Inquiry stated that Israel’s use of force demonstrated “an overall lack of respect for the cardinal principles regulating the conduct of armed conflict, most notably **distinction**, proportionality and precaution.”⁵⁸ This highlights that either the attacks were conducted without accurate intelligence or the intelligence collection was exploited by Hezbollah; in the knowledge that Israel would receive widespread International condemnation for its acts. It also calls into question whether Israel considered they were fighting in a War of survival. Therefore, the usual restrictions associated with a deontologist approach were replaced by the less restrictive consequentialist view and they paid little heed to the excessive collateral damage caused.

During Operation Allied Force a British PGM was utilised against a rail bridge on the Belgrade-Salonika line on 12 Apr 1999 and struck a train that was crossing at the time. The UN high commissioner for human rights, Mary Robinson, questioned that “if it is not possible to ascertain if there are civilians on the bridge, should those bridges be blown?”⁵⁹ Should allied intelligence have had train time information, available on open source, and avoided known busy periods? In either case it demonstrates that precision weapons can only contribute to overall conflict success when employed with accurate intelligence against carefully selected targets. The collection, analysis and dissemination of such intelligence is a skilful, timely and costly business. If precision is to be

⁵³ Finn, “The Broader Implications of the Increasing use of precision weapons”, 44.

⁵⁴ Arkin, *Divining Victory, Airpower in the 2006 Israel-Hezbollah War*, 127.

⁵⁵ *Ibid.*, 79.

⁵⁶ *Ibid.*, 64.

⁵⁷ *Ibid.*, 109.

⁵⁸ *Ibid.*, 149.

⁵⁹ Finn, “The Broader Implications of the Increasing use of precision weapons”, 46.

effective in the FCOE, the ability to collect accurate intelligence in it must be considered essential. It also raises the question whether precision has any significant benefits in a congested urban environment, should the level of intelligence required for its employment not be available or have the potential to be readily exploited.

Warhead

The effectiveness of precision is not just about accuracy, it is also inextricably linked to the warhead. Therefore, when evaluating future performance this must be considered as part of the analysis. A bomb guided to pin point accuracy within 20ft of its intended mark is technology at its best, but if it was a 5000lb munition rather than the intended 500lb munition the effects would be completely different. Accuracy not only enables the very clinical engagement of target sets, but allows the use of a much smaller warhead in order to achieve the required effect. It is the explosive charge within the weapon that is used to calculate the possibility of both collateral damage and the weapon's ability to achieve the desired effect.

During the conduct of OUP, as the conflict moved closer to major cities and towns, the requirement for low collateral damage munitions became an increasing priority. Only PGMs were permitted for use as the accurate placement of a weapon enabled the warhead size to be restricted, limiting risk of collateral damage. The NATO defined Centre of Gravity was the protection of the Libyan civilian population,⁶⁰ the impact of NATO causing collateral damage would therefore impact on NATO's identified vulnerability. The demand for the UK Brimstone and other similar smaller warhead PGMs was so high that not only were some targets not engaged due to a lack of appropriate class weapons available, but coalition stockpiles became depleted.⁶¹ This constrained approach of only releasing PGMs during OUP significantly lessened any adverse media coverage and global criticism of coalition conduct, but also lengthened the time to achieve operational objectives. Following a deontological approach, in this war of choice, undoubtedly furthered the suffering of the civilian population the coalition was there to protect.

The employment of a precision laid inert bomb was explored during OUP to minimise collateral damage by one coalition member, but was quickly abandoned due to its inability to achieve the desired effect. It is at this point when the cost of the technology may well exceed the benefits that are offered and becomes difficult to justify. The Israeli employment of precision weapons destroyed between 150 and 200 dwellings in the Haret Hreik sector of Lebanon during the first week of conflict.⁶² The attack against the Jiyye electrical plant led to the spillage of 10,000 tons of

⁶⁰ Romao, "Targeting and Adaptation in Combat: Examining the Libya Case", 18.

⁶¹ Barrie, "Libya's Lessons: The Air Campaign, Survival: Global Politics and Strategy," 64.

⁶² Lambeth, *Air Operations in Israel's War Against Hezbollah*, 175.

oil into the Mediterranean.⁶³ Although, from a technical perspective, the results were very impressive, they met with condemnation over the disregard for the significant collateral damage caused. A smaller warhead may have reduced the collateral damage effects, but not achieved the military objective required. When that point is reached the effectiveness of precision is zero. The balancing of kinetic effects, collateral damage and the achievement of military objectives will continue to challenge commanders in the FCOE, where every wrong decision will have strategic consequences.

As conflicts demonstrate that precision weapons can, and have been employed without unnecessary collateral damage, the International community will expect nothing less in future conflicts by those who own the capability. The two conflicts demonstrate differing approaches to the acceptability of collateral damage, in an environment where the distinction of adversaries and civilians is almost impossible. During OUP the coalition was fighting in a war of choice, target sets and warhead size were limited in order to minimise collateral damage. The Israelis, perhaps fighting for perceived State survival, performed strikes against a wider set of targets and received International condemnation for excessive collateral damage. The balancing act of achieving objectives against that of collateral damage will never disappear, but it is gaining more focussed attention. Whilst impressive in accuracy, the employment of fifth generation aircraft to deliver precision weapons, which do not achieve the desired effects in a congested and cluttered environment, is not value for money. Will we, therefore, reach a point where the only answer will be to deploy ground forces to enable the effects required in this type of conflict?

LOAC

Precision weapons enable a force to uphold and operate within the requirements set by the LOAC and remain ethically right. They give politicians choices, whilst maintaining global support. The mass casualties caused in the bombing campaigns in WWII were only justified at the time against the fight for state survival and the actions being taken by Nazi Germany. Technology advancements now give options on how to conduct warfare more discriminately, whilst satisfying the LOAC, but global media coverage and judgement by a wider audience has dramatically increased. As was apparent in both Lebanon and Libya, the adversary being faced was content to exploit the LOAC and use both proportionality and distinction to their advantage. Hezbollah and the Gaddafi regime utilised the civilian population and infrastructure to conceal them, in order to reduce the effects of a larger and technologically superior force.

⁶³ Lambeth, *Air Operations in Israel's War Against Hezbollah*, 175.

The comparative number of civilians killed was 72 in Libya⁶⁴ and 1190 killed in Lebanon.⁶⁵ This highlights very different approaches, although both forces employing precision were fighting a similar adversary. The strength of the precision weapon is the ability to strike a precise point, but to achieve the correct effect (kinetic and global acceptability) the disciplined process of collateral damage assessment must be conducted. In the Libyan case this precluded the striking of a significant number of legitimate targets,⁶⁶ due to the unacceptable consequences of global condemnation over disregard for both distinction and proportionality. The deontological approach appeased global opinion but undoubtedly lengthened the civilian suffering in Libya. The apparent disregard of the Israeli forces to conduct such disciplined methodology, whilst following a consequentialist approach in precision application, led to significant collateral damage and international condemnation. Israel also failed in gaining the return of the hostages taken or having any significant impact on the Hezbollah offensive action.

The employment of precision weapons in the contemporary environment can still be successful in achieving the required target effects. However, as experienced during OUP, the increasingly restrictive restraints on employment, to satisfy the LOAC and International criticism, is now weakening its overall effectiveness. Whilst precision's ability to restrict collateral damage is a strength, possessing it is equally becoming overly restrictive. The continued asymmetry in technology will continue to force adversaries to find methods with which to level the playing field. The Israeli case demonstrates that even if collateral damage is accepted, there is no guarantee of success from air launched precision. In this environment, against this type of adversary, where distinction remains a priority, it is only boots on the ground that will achieve operational objectives and strategic endstates. Both conflicts demonstrate how global opinion is swayed against those with the technology when they don't strictly abide by the acceptable rules. In the Israeli conflict both sides caused significant collateral damage,⁶⁷ but it was the technologically superior side that received most condemnation; is this because their technology allowed them greater choice in doing something about it?

Expectation to Achieve Favourable Results

The effectiveness of precision weapons now has to meet the expectations of, and be judged by, the International community in addition to the political and military domains. The media audience generated by globalisation has the ability to cast a vote and voice opinion on state actions in warfare. Anyone who has access to the media environment will have a view of what precision effects should look like, because those who use it want to advertise their Justness and successes.

⁶⁴ Barrie, "Libya's Lessons: The Air Campaign, Survival: Global Politics and Strategy", 61.

⁶⁵ Arkin, *Divining Victory, Airpower in the 2006 Israel-Hezbollah War*, 98.

⁶⁶ Based on the authors experience when deployed on OUP and responsible for the execution of the coalition Air plan.

⁶⁷ Arkin, *Divining Victory, Airpower in the 2006 Israel-Hezbollah War*, 56.

In the Libyan campaign the press questioned, “What is the point in maintaining squadrons of Tornado jets and investing in Typhoons if two months and 300 bombs have had no decisive impact?”⁶⁸ In fact, the employment of Air Power had just assisted in the recapturing of Benghazi from the Gaddafi regime forces.⁶⁹ But what this demonstrates is the extent of involvement and influence that global opinion and media have in military operations; in particular, the expected success that precision weapons can deliver in conflict. What they do not consider, are the constraints that are placed on their usage.

The public perception over the rise in civilian casualties since 2004 caused by drones in Pakistan was that if it is possible for a weapon to be guided within 40ft of its impact point, then the deaths must have been deliberately planned.⁷⁰ In the 2006 Israel-Hezbollah War the media quoted a Lebanese man as saying “They want to bring us back to the occupation era...Will the world continue to watch them kill children without doing anything.”⁷¹ When strong emotions such as this are made so public it generates fierce opinion that prompts action. Within 24 hours of Israeli military action France, Italy and Russia had condemned Israeli retaliation as being disproportionate. In this environment, against this type of adversary, precision effect gained little positive outcome for the Israelis and arguably, from a western perspective, did more damage than good. The Israelis seemed content to accept this risk, which may have been due to their perception of State survival. Perhaps if more western modernised states also took this view and accepted greater risk of condemnation, precision weapons may still maintain their effectiveness in the FCOE.

The Hezbollah rocket attacks against Israeli villages received much less widespread interest, although equally indiscriminate in their employment. In the Libyan campaign, critics voiced opinion over the time taken to achieve success, whilst during the Israeli campaign it critiqued the collateral damage being caused. It is in this context that the very strength of precision effect being so accurate, and a method of clinically conducting warfare, that it is also a significant weakness when it does not achieve what is expected of it by the global audience. It is this audience that now wields greater influence in the political domain and provides potential adversaries a very real area for exploitation, with which to rebalance any technological asymmetry. Hezbollah utilised concealment within illegitimate military targets to invite the foul from the Israelis, knowing that the International community could be exploited. However, if the Israelis did not use precision weapons in that environment, then Hezbollah would continue to operate with freedom unless a ground force was deployed, that could provide both distinction and proportionality.

⁶⁸ Barrie, “Libya's Lessons: The Air Campaign, Survival: Global Politics and Strategy”, 59.

⁶⁹ Ibid.

⁷⁰ Wetham. “Killer Drones”, 27.

⁷¹ Arkin, *Divining Victory, Airpower in the 2006 Israel-Hezbollah War*, 12.

Conclusion

In our quest for learning lessons we [the military] look to organise those lessons into doctrine about how to fight the next war. Clausewitz argued that the need to understand “...no two wars are identical”⁷² was critical for all political and military leadership. If precision weapons are to continue to be effective in an increasingly urbanised battlespace, that will be both complex and congested,⁷³ the methodology and governance with which they are employed must also develop. The ability to discriminate what is a legitimate military target will be exceptionally challenging and difficult to always get right; it should, therefore, not always be expected. Equally challenging will be judging proportionality, whilst minimising the negative effects from global opinion when adversaries strive to draw a foul. Technology does not currently enable precision weapons to discriminate between legitimate and illegitimate targets; it is only the targeting process that can establish legitimacy and evaluate collateral damage. The development of precision weapons has been driven by the requirement to achieve greater effect with less, whilst minimising collateral damage. They will continue to be a requirement of any future conflict, but be wholly reliant on the increasing complexities of understanding the environment through the collection of intelligence. The magic of precision is not the weapon, but the gathering of the information that is given to it.

The successful employment of precision and its widespread media attention has resulted in the tightening of governance for its employment. The relationship of the interlinking factors of global opinion, political restrictions and governing and ethical constraints, is the primary influencing factor on precision control. The weapon effects fuel opinion, which influences political restrictions and tightens the governing and ethical restraints in which how and against what, the weapon, may be employed. The success of precision effect in the first Gulf War was, arguably, the tipping point for precision; after this, the expectations of the global audience on how precision should be employed (in a war of choice), and what is acceptable, became irreversible. As long as the rules that govern warfare remain static against advancing technology and an adversary continues to find ways in which to explore and exploit them, precision weapons will never be the panacea.

Although the FCOE deems the possibility of a state-on-state conflict as unlikely, it is possibly only in this scenario when a relaxation in how lethal force is employed may be deemed as acceptable. However, this in itself will require critical decision making as to what constitutes a threat to state survival and global opinion will have a say as to whether the results are acceptable. In the Israeli 2006 War, if the political leadership considered it was in a conflict for survival that was certainly not the opinion of much of the International community. As such, it faced condemnation for its

⁷² Michael I Handel, *Masters of War, Classic Strategic Thought*, (London: Frank Cass Publishers, 2001), 76.

⁷³ United Kingdom. HM Government. *Securing Britain in an Age of Uncertainty: The Strategic Defence Review*. (Norwich: TSO, 2010), 16.

disproportional response to Hezbollah and the enormity of the resulting collateral damage. How can such a technologically equipped and powerful state face failure against such a relatively weak militarily threat? The employment of Israeli precision in the complex, congested environment of Lebanon attained its destructive success but catastrophically failed in its effectiveness of achieving a desirable outcome.

Accuracy and the ability to deliver rapid effect, whilst minimising collateral damage and risk to friendly forces will remain a critical requirement. Previous conflicts have demonstrated the success of precision employment, but the FCOE is unlikely to allow such success to emerge whilst abiding by what is deemed as an acceptable way to employ such technology. The adversary that will be faced is aware that the genie is now out of the bottle and will utilise every opportunity to exploit the expectations of the global audience. The asymmetry in the battlespace will consist of technical differences, force size disparities and ethical values which are misaligned. This will drive an adversary to adopt a consequentialist approach to the fight, in which he will attempt to draw a foul to gain influence. The ability for precision to deliver success in this environment will be judged on past performance, but the environments will be increasingly more diverse and significantly more difficult to understand by airborne ISTAR alone. It is unlikely in the foreseeable future that any technology will be available that can replace a deployed ground force to judge both discrimination and proportionality.

If conflict in the FCOE is not for state survival then it is likely to be one of choice. A war of choice is one in which modern society will continue to be aligned with the deontology theory, and as such, the restrictions governing lethal force will continue to tighten. The conundrum that will challenge governments in the future will be whether or not the effectiveness of precision weapons will be able to deliver an acceptable outcome in such an environment. The results of which will be judged by an increasingly growing National and International audience, who hold the influence to give, or remove, support for the government. Doing the right thing is now not necessarily only linked to ethical values; it is also critical to a government wishing to maintain power. The risk of strategic failure due to adverse global opinion will continue to influence and constrain the advantages that precision effectiveness can have in the FCOE. The success that precision weapons have enjoyed in recent conflict is likely to be its very weakness in the FCOE, where the right decision is so widely judged, governed and restricted. It may be that we have already passed the second tipping point where precision is no longer a viable option in such an environment, as it is unable to deliver the success that is warranted by the cost and effort of its delivery.

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