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MORALITY IN MODERN AERIAL WARFARE

by

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Preface

Our politicians need to understand that this isn't going to be clean. There is going to be collateral damage. There will be unintended civilian casualties. We will do our level best to prevent both, but they've got to grit their teeth and stay with us. We can't cut and run the first time we hit the wrong end of a bridge. We can't cut and run the first time we kill innocent people that clearly we did not intend to kill.

— Lt Gen Michael Short
Address to the Air Force Association Air
Warfare Symposium, 25 February 2000

There is a moral way to wage war, be it in the air, on the sea, or on the ground. This paper contends that the US Air Force can maintain a high level of morality in the conduct of air operations. In doing so, we will save the lives of both our airmen and innocents on the ground. The authors intend to show that there is a long tradition of morality in war and that we can and should maintain high standards. We do NOT advocate, nor should the reader infer that we believe it is possible to conduct a war in which no innocents are harmed. We DO urge senior commanders to balance the proportionality of probable non-combatant casualties against the military necessity of the given targets. If that balance cannot be made, we urge our leaders to say so.

Lt Gen Mike Short, the air commander for Operation Allied Force, quoted above, makes the proper case that there will be unintended casualties and that we, as a nation, must understand this when waging war. What the authors make clear is that anything beyond the proportional loss of life due to necessity is immoral and must be prevented.

Part 1

Introduction

“If strategic advocates propose that success can be attained only by violating noncombatant immunity, the moral judgment is simple: there is no justifiable war that is pursued by murderous conduct. A more complex decision arises when the proposal is that standards of proportionality must be loosened to achieve success. The nature of the proportionality criterion is that it is inherently open to revision; a claim that it is too tightly drawn and should be revised in the name of a competing norm cannot be instantly rejected. But continuous, incremental relaxation of standards of proportionality can yield simply another version of ‘must win’.”

— Reverend Bryan J. Hehir
“Kosovo: A War of Values and the Values of War”
America, May 15, 1999

The United States finds itself today in the position of being able to attack a wide variety of targets throughout the world with precision undreamed of even 20 years ago. This precision engagement capability, a core competency of the US Air Force, leads to a serious debate about the ability of the US to project power at any place and at any time with a precision that will minimize the threat to non-combatants. However, despite the promise of precision engagement, we have yet to see it brought to fruition. Although precision weapons capability has continued to improve, we found during Desert Storm and Allied Force, that we still incur politically and morally unpalatable levels of civilian and non-combatant casualties due to poor planning and poor employment. We also find it generally accepted that we need to inflict various levels of pain upon the enemy population in order to bend them to our will.

This paper contends that aerial operations can be conducted using just war guidelines, which can preserve and enhance the US's traditionally high moral position. It is entirely possible to carry out an air operation to achieve strategic and operational objectives while upholding morality, minimizing casualties on both sides, and bringing about a swift end to the conflict. To do so, however, will require an acknowledgment that the US Air Force (USAF) may have to institutionalize changes to achieve that goal, continue to develop and procure even more lethal and non-lethal weapons, and perhaps forsake hitting certain targets in the future if non-combatant casualties are disproportionate to the gain. The USAF, rather than defending past actions as the unintended result of a job in which our purpose is to "kill people and break things," should be in the forefront of the effort to achieve the antiseptic lethality that pundits recently hailed as the future of air operations.

The applicability of this paper is bound by aerial warfare employed against an industrial state. Morality, as applied here, will be bound by aerial warfare (non-nuclear, -biological, or -chemical) where the intended target is identified before the aircrew has flight-planned for the mission. This paper will not consider close air support or armed reconnaissance where the flight crew is unaware of the target's position or the proximity of non-combatants to the desired target.

We will define what morality is, and should be in war, using precedent, centuries of Just War tradition, and the concepts of the authors. We will look at the history of aerial bombardment from a moral standpoint and then detail how the US fared in both Desert Storm and Allied Force. Finally, we will make the case for morality in future operations and show that it is not only possible, but also necessary, for us to take this path. As time and technology progress, we should develop and field the capability to carry out an aerial operation where the risk to non-combatants is minimized. If there are effects that need to be achieved in an area

populated with non-combatants, we should employ emerging lethal, non-lethal, or information-based weapons against them, ensuring that the noncombatants are affected only to a level proportionate to the necessity of the target.

This paper will step through a methodical thought process to support the conclusion of the applicability of morality within an aerial bombardment campaign. A basic description of the basics of aerial bombardment will be followed by the USAF's current legal norms, guidelines and philosophy. With these areas covered, we move on to Just War with respect to aerial warfare and discuss moral considerations for targeting. We will then present a historical perspective on the effectiveness of previous aerial bombardment campaigns. Lastly, the paper will conclude with a discussion about the applicability of morality to future air operations.

There can be little doubt that should we strive for such a capability, we will leave better states of peace after future conflicts, rather than the enmity we so often leave today. We believe the US sets the standard for the application of morality in wars past, present, and future. Morality in war is consistent with our culture. We have the technology and assets with which to wage a moral war. Just as important is the possibility of attaining a better end state after a conflict. This notion is not a sinkhole for military spending, but a proper application of Just War norms. As we set this standard, we must continue to apply it to all future operations.

Part 2

Strategic Aerial Bombardment: The Basics

The purpose of strategic attack is to produce “effects to demoralize the enemy’s leadership, military forces, and population, thus affecting an adversary’s capability to continue the conflict”.¹ We are given a military objective that allows us to ascertain the desired effects needed to achieve that objective. We then develop target sets, the destruction of which will achieve these effects while making an overall air strategy to execute these effects on the enemy. The strategy will lead to the development of a Master Target List or Joint Integrated Prioritized Target List (JIPTL). This list forms the basis for attacks on the enemy state. But how do we develop a proper JIPTL? We combine our objectives with intelligence functions, an analysis of the enemy state, and the enemy state’s objectives.

Intelligence is critical to this process. Intelligence ascertains which target sets must be attacked to achieve desired effects. After a strike, bomb damage assessment (BDA) is used to determine the effectiveness of the strike. Effects-based BDA must emphasize determining not the level of destruction, but rather whether the effect was achieved. Given today’s intelligence architecture, systems capabilities, and training of intelligence personnel, quite often the only effect that is assessed on a target is the level of destruction. To this end, military planners normally package aircraft and weapons loads to achieve a level of destruction easily measurable via imagery. However, the level of destruction does not necessarily adequate to desired effects.

This fact can easily lead to more bombs being put on a target than are necessary to achieve a desired effect or operational objective.

Air campaign planners must weigh the military necessity of attacking a target to achieve a desired effect against proportionality of the weapons used to attack that target. In simplest terms, *jus in bello* (just conduct in war) requires that the minimum amount of force necessary to achieve the objective (the desired effect) be used in order to limit damage to innocent persons and property near the target.

Notes

1. Air Force Doctrine Document 1, *Air Force Basic Doctrine*, September 1997, 51.

Part 3

Airpower Theorists and Morality

Airpower is inherently offensive and can take the fight to the enemy state, bypassing surface combatant forces. Since the invention of the airplane, its uses have been continually exploited. It can be used to degrade, paralyze, and possibly demoralize the enemy state.

At the advent of aerial bombardment, modern warfare was essentially fought as a land war between peer industrial states where industry fed the military war-making machine. If an army disabled the enemy industry, it essentially disabled the state's ability to wage war. The common method of disabling this industry was to seek and destroy “critical nodes” within the industry. If these critical nodes were disabled, the industry collapsed around them, leaving the armies in the field without a lifeline.

Gulio Douhet is considered to be the first true theorist on aerial bombardment. Douhet, who developed his theories between World Wars I and II, defined warfare as a conflict of whole states against states, commonly known as total war. His theory proposed the bombardment of enemy air forces followed by the industrial base and the civilian populace in order to win a war without having to engage in massive ground battles. Douhet believed that the civilian populace was not only easier to target but very susceptible to aerial bombardment. Douhet so believed in total war that he proclaimed “all of their citizens will become combatants, since all of them will be exposed to aerial offensives of the enemy.”¹ Essentially, he rationalized the elimination of the

moral barrier between killing enemy troops and their supporting populace. Although it seemed a good plan for the time, the limitations of striking the entire enemy populace and forcing them to succumb by breaking their will was questioned by American theorists as the best method of aerial bombardment.²

Countering Douhet's theories were Billy Mitchell and the U.S. Air Corps Tactical School (ACTS). Their theories built a logical argument about industrialized societies and what it takes to disable a state's war fighting capacity. Mitchell and ACTS believed that this "industrial web" concept was the most effective way to wage warfare. Although they did include the civilian populace as a target, civilians were considered a last resort.³ This industrial web theory formed the basis of the massive US Army Air Forces (USAAF) aerial bombardment campaigns in WWII. This industrial theory was also the predominant conventional strategic bombardment theory used until the conception of John Warden's 5-ring theory along with the development of stealth properties on aircraft and precision guided munitions (PGMs).

Colonel John Warden developed a new conceptual model for air warfare by identifying five concentric rings within adversary states. These rings consisted of, inside to outside, leadership, organic essentials, critical infrastructure, the civilian populace, and finally the enemy's fielded forces.⁴ Warden theorized the enemy state could be paralyzed by systematically dislocating the leadership from the state while surgically striking the organic essentials that feed the industrial base as well as the infrastructure that process the industry's products.⁵ PGMs were essential to this theory, for they gave airpower the ability to accurately strike these targets. Stealth enhanced this accuracy by greatly improving the survivability of the aircraft against the threats it faced.

However, Warden's theory has limitations. Leadership is very difficult to target because attackers require very timely and accurate intelligence as well as the ability to strike and destroy

very hard command posts. The disabling of the industrial base assumes the war will continue for a lengthy period of time so as to affect the state's ability to support itself as well as the fielded combatant forces. Organic essentials may also be difficult to attack since enemy states may have numerous and redundant resources that are too abundant to destroy. The critical infrastructure is also difficult to destroy or neutralize because there are often too many points to attack to achieve a desired effect. Regarding the civilian populace, it goes against current norms and practices to directly target non-combatants. Fielded forces are also difficult to target for they are mobile, typically widely dispersed, and difficult to acquire in close terrain.

Along with targeting difficulties, the composition of the state itself makes Warden's theory even more elusive. Modern states have progressed to a point where most of the services and infrastructure are so intermingled that it quickly becomes difficult, if not impossible, to distinguish between targets that are exclusively military or civilian in nature. This poses both a great capability and severe problem to the ring theory. With this connectivity between rings, if one ring is affected, it has the potential to cause cascading effects across other rings. Combat planners often desire the military benefit of cascading effects between rings. However, these cascading effects may go far beyond the desired military effects. This cascade may cause a moral issue if targets attacked in one ring have an unintended or disproportionate effect on non-combatants. This issue should pose a problem for the modern targeteer who attempts to affect a military target that is intermingled amongst civilian targets or at least subject to the same effects intended for the military target. This paradox leads directly to many of the moral dilemmas we face.

The basics presented here create the dilemma we address. Is it best to target the state as a whole or just disable parts of the state to minimize its ability to resist or even survive without

surrender? Due to the complexity of the issue, the USAF has, with the help of the international community, developed regulations, guidelines and norms to aid the combatant commander in the employment of strategic aerial bombardment campaigns.

Notes

1. Louis A. Manzo, "Morality in Warfighting and Strategic Bombing in World War II", *Air Power History* 39, no. 3, (Fall 1992): 161.
2. Ronald Shaffer, *Wings of Judgement: American Bombing in WWII* (N.Y.: Oxford University Press, 1985), 23.
3. Peter R. Faber, "Interwar US Army Aviation and the Air Corps Tactical School: Incubators of American Airpower", in *The Paths of Heaven: The Evolution of Air Power Theory*, ed. Col Phillip S. Meilinger (Maxwell AFB Ala.: Air University Press, 1997) 215-221.
4. John A. Warden, "Employing Airpower in the Twenty-first Century", *The Future of Airpower in the Aftermath of the Gulf War*, eds. Richard H. Shultz, Jr, and Robert L Pfaltzgraff, Jr. (Maxwell AFB, Ala.: Air University Press, July 1992), 65.
5. David S. Fadok, "John Boyd and John Warden: Air Power's Quest for Strategic Paralysis" (Maxwell AFB, Ala.: School of Advanced Airpower Studies Thesis, Air University, June 1994) 30-34.

Part 4

Current Legal Norms, Guidelines, and Philosophy

The current guidance the US uses for the targeting of an enemy state is covered in the Law of Armed Conflict (LOAC) Guidelines for Military Necessity and Proportionality. This document essentially regulates the conduct of armed hostilities and states what can be attacked, how it should be attacked, and what weapon can be used. Currently, there is no international guidance that entirely addresses these issues, which places us in what Colonel Philip Meilinger states as a “vacuum” where morality is used instead of legal rules.¹

The spectrum of warfare that LOAC covers ranges from Peacetime Military Operations Other Than War (MOOTW) to Biological and Chemical warfare including Internal Conflicts, International Armed Conflict, Conventional Ground Combat, and Strategic Bombardment. Excluded are Banditry, Terrorism, and Nuclear Warfare. Within the conventional warfare regime, LOAC does cover what the attacker must do and the defender should do while engaged in combat.²

The attacker has a duty to distinguish between military objectives (“targets”) and civilian objects. Law does not specify whether this target sorting is accomplished with accurate intelligence prior to the attack or with onboard aircraft sensors during the attack phase. The bottom line here is that the attackers must not intentionally attack civilians or employ weapons or tactics that cause excessive civilian casualties. But neither does the law define who determines

excess—the commander or planners. At the same time, the defender has a duty to separate civilians and civilian objects from military targets.³

The major problem with this ruling is that to make it work, both sides must agree on what are “valid” military targets and what are civilian objects and non-combatants. This also assumes that the defender is given time and/or warning of any attacks as well as the ability to make the change. Although the enemy state may attempt to separate the military targets from civilian objects, it is widely understood that if a lucrative military target is placed among civilians or non-military objects, it is still a viable target with a few exceptions.⁴

LOAC restricts attacks against “Works and Installations” containing dangerous forces. “Works or installations containing dangerous forces, namely dams, dikes and nuclear electrical generating stations, shall not be made the object of attack, even where these objects are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population. Other military objectives located at or in the vicinity of these works or installations shall not be made the object of attack if such attack may cause the release of dangerous forces from the works and installations and consequent severe losses among the civilian population.”⁵ LOAC guidance further places restrictions on the amount of excess damage these attacks can cause to non-military objects.

LOAC proportionality prohibits the employment of any kind or degree of force not necessary for the purposes of war, that is, for the partial or complete submission of the enemy with the least possible expenditure of life, time, and physical resources (also referred to as the principle of unnecessary suffering).⁶ This forces the attacker to use the best means necessary to attack the target. In this case, should the attacker be required, if they are available, to use precision weapons to attack targets? There is conflicting guidance within LOAC on this issue.

LOAC Article 22 further states that "the right of belligerents to adopt ways of injuring the enemy is not unlimited" but at the same time it is "Especially forbidden" to: use poison or poisoned weapons, kill or wound "treacherously," or use means "calculated to cause unnecessary suffering."⁷ The methods or means of warfare is not unlimited yet it is prohibited to employ weapons, projectiles and material and methods of warfare of a nature to cause superfluous injury or unnecessary suffering. There is also international pressure to adopt a ruling that prohibits attacks that are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment. The US has not accepted this legislature for it will exclude the use of nuclear weapons.⁸

The US does require though, that each service secretary ensure that the Component's General Counsel or Judge Advocate General conducts a legal review of the intended acquisition of all new weapons systems. The review should evaluate these new weapons for compliance with current US and ratified international obligations as well as their legality under international law prior to their use in a conflict. Although it is prohibited to use any weapon whose primary effect is to injure by fragments that escape detection by X-rays, the rules on incendiary weapons are a bit complex.⁹

The US and international rules for the use of incendiaries doesn't limit or prohibit their use except for attacks and/or collateral effects against civilians, plant cover and forests. These rules are lifted if the incendiary effects are a secondary effect combined with blast or frag. For example, the USAF employs a cluster munition designated CBU-87, which dispenses submunitions that have two main fragmentation effects as well as an incendiary effect. The primary effect for the bomblet is fragmentation and the incendiary effects are very limited, intended to ignite the fuel in the vehicle the ordnance hits.¹⁰ The most restrictive rule of the LOAC states

that it is prohibited in all circumstances to make any military objective located within a concentration of civilians the object of attack by air-delivered incendiary weapons. This means any concentration of civilians, be it permanent or temporary, such as in inhabited parts of cities, or inhabited towns or villages, or as in camps or columns of refugees or evacuees, or groups of nomads.¹¹

Given the basics of aerial bombardment and the dilemma of proportionality in conjunction with the norms and guidelines understood from the international community, we now have a basis to propose the argument for applying morality to the strategic aerial bombardment campaigns we wage in the future.

Notes

1. Philip S. Meilinger, "Winged Defense: Airwar, The Law, and Morality", *Armed Forces & Society Magazine* 20, no.1 (Fall 1993): 103.

2. W. Darrell Phillips, Chief, International and Operations Law Division, Air Force Judge Advocate General School, *The Law of Armed Conflict* (Air Command and Staff College Law Elective Handout), Jan 2000, 1.

3. Kirk L. Davies, and Lynn G. Norton, *The Military Commander and the Law* (Maxwell AFB, Ala.: The Air Force Judge Advocate General School, 1998), 627.

4. Phillips, 3.

5. Phillips, 4.

6. Davies, 628.

7. Davies, 628.

8. Phillips, 4.

9. Davies, 629.

10. Duncan S. Leonard, ed., *Jane's Air Launched Weapons*, (Surrey: Sentinel House, 1993), CBU-87/B Section.

11. Phillips, 5.

Part 5

Just War and Aerial Warfare

The application of morality to warfare has been argued throughout history. Just War doctrine breaks it down into two main categories: *jus ad bellum* and *jus in bello*. For the purpose of this paper, the *jus ad bellum* (the just decision to enter into war) decision has already been made and the nation's military forces are committed to war. The question therefore revolves around *jus in bello* (just conduct in war), mainly the aspects of military necessity and proportionality. Our goal is to establish moral targeting guidelines within just war tradition as well as employment rules of engagement (ROE) that combatant forces can effectively use to decisively employ airpower against an enemy state.

Non-Combatants and Necessity. For our focus on morality, we propose that aerial bombardment that adversely affects (endangers life, limb or basic necessities of) non-combatants disproportionately to the necessity of the intended targets is immoral. These effects may stem from the actual targeting and striking of non-combatants down to any short or long-term effects that will affect the non-combatants, i.e. bombing the water supply of a military base that also feeds the local city, potentially causing a future outbreak of cholera. Although the definition for a non-combatant has been argued for quite some time now, the definition used for this argument is the portion of the population who do not directly serve in nor directly support the military. Those who directly support the war effort are ones who work in the military industrial complex

(i.e. bomb manufacturing). Non-combatants comprise the remainder of the population. Not that these others would not supply the military with food, water, etc. but they at least provide the civilian populace with the same service. Necessity, or “‘reason of war’ can only justify the killing of people we already have reason to think are liable to be killed.”¹

Proportionality. Effective strategic bombing relies on two basic premises: accurate and timely intelligence to ascertain which targets to strike and BDA; and the ability to precisely strike these targets with minimal collateral damage. For the purpose of this present argument, we will assume that all of the selected targets fall within the “military necessity” category. The focus then is on proportionality. According to Michael Walzer, proportionality is about prohibiting excessive harm, not just harm to individuals, but weighing “any injury to the permanent interests of mankind against the contribution that mischief makes to the end of victory.”² We see three broad categories of aerial bombardment in which to view the necessity and proportionality arguments:

Category 1: *Isolated military targets* that have no ‘ties’ to the civilian populace. The weapon effects on these targets will have no long- or short-term effects on the non-combatant populace. For example: a radar site on top of a mountain that only services the military or an armory isolated from a civilian population.

Category 2: *Military targets*, as well as *fielded forces*, regardless of their location. In this case, the application of morality becomes problematic because military forces in today’s industrial society are intermingled throughout the state. Collateral damage weapon effects from these strikes will invariably affect the civilian populace. We must balance the military *necessity* of the strike against the *proportionality* of expected damage and death of non-combatants and civilian structures.

Category 3: We elect to wage war against the state as a whole (*total war*) with the intent of defeating the state, including the people within the state. This warfare will strike targets that help the military in any fashion. This is the type of war the Allies employed in WW II.

The first category can always be deemed moral. That is without question. We posit that the third category is not moral in today's world environment. We do not foresee a threat that would require us to abandon a high level of morality and require attacks on non-combatants. However, the second category is less clear and begs the most discussion. The closely related issues of necessity and proportionality must be considered and reviewed by senior military leaders. The number of non-combatant lives that are worth a certain target being attacked is not a decision for a mid-grade planning staff officer. ***As this is a grave responsibility, we propose that no officer below the position of Joint Force Air Component Commander (JFACC) should have the authority to make that decision.*** Lower ranking combat planners and military lawyers should obviously continue to advise the JFACC. However, the JFACC is the officer militarily and legally responsible for the conduct of air operations. It is he alone who should make the decision when it comes to attacks which will likely cause non-combatant casualties.

If non-combatant lives are at risk, senior military commanders must be part of the decision cycle. If a JFACC were required to approve every target whose attack would *likely* result in non-combatant casualties, there would be far fewer casualties on all sides. Not because the JFACC would be concerned about "taking the heat" for those casualties while answering to the media, but because over time, he would be the person responsible for balancing how many non-combatant lives are lost with respect to achieving objectives. Of course, if a target is important enough, the scale of proportionality dictates acceptance of a certain level of non-combatant risk.

However, that decision should not be left to, or delegated to a more junior officer on the planning staff. That decision should rest with the JFACC.

Notes

1. Michael Walzer, *Just and Unjust Wars* (Basic Books, 1977), 144.
2. Walzer, 128.

Part 6

Moral Considerations for Targeting

There are 6 elements involving the issue of morality of targeting in air warfare which bear upon this argument:

Safety of Friendly Combatants. The people who fight the air war require safety as well as non-combatants in the enemy country. Many military and civilian leaders say that the safety of our forces should always be paramount. Are they right? We justify ever-larger force packages due to the threat to those forces when they deploy. How do US servicemen compare to enemy non-combatant adults and children? One important distinction is that our all-volunteer forces enter into a contract to serve, and if necessary, fight, and as such knowingly incur a risk when in combat operations. Non-combatants do not enter into any contract for risk in war either with their governments or with the US. Furthermore, our conscripted enemy brothers-in-arms may not have that luxury. Do we have an obligation to limit their casualties? We say no for soldiers, and yes for non-combatants, but not to the degree that it raises risk to our own forces beyond the same necessity and proportionality scale.

Our Political Leaders. Their guidance will influence the environment of the decision-making because they will impose restrictions on what is “politically acceptable” during the course of the war. Given that our political leaders decide when we enter into a war, it is

acceptable that they limit what we can do. This boils down to the military *constraints* levied upon the war fighters and the *restraints* we then impose upon ourselves for various reasons.

Our Allies, their men, political leaders, etc. How do they compare to our servicemen, and enemy non-combatants, especially enemy women and children? Is the safety of their men measured at the same level as ours? In coalition operations, it is imperative that partners hold to the same moral standards with respect to non-combatant casualties as well as friendly acceptable losses. Failure to be unified on this issue can quickly tear a coalition apart.

The length and scope of the war. What is the expected amount of total violence and death, and what are the stakes for the US? Is our survival at risk? Some military leaders rightly question whether it is justifiable to conduct massive initial strikes to make the air war decisive as soon as possible or to hold back and attempt to minimize non-combatant casualties in the process. To minimize total long-term violence, some want to initially employ our forces at their fullest potential from the beginning of the conflict. If not, there is potential to lengthen the war. Furthermore, the US has rarely been threatened with its very survival. This fact certainly limits Americans' perceptions about the acceptable proportionality of non-combatant casualties.

The Media. There are numerous people both inside and outside the military who argue that were it not for media access, the military could conduct operations without being under such tight scrutiny over non-combatant casualties. We should never consider the media in decisions we make about targeting unless we are afraid of telling the truth. If so, we should re-evaluate said decision. Right is right whether or not the decision is reported in the media.

The Enemy state: What type of state is it – agrarian or industrial? Does it have distinguishable Warden Rings? Most likely, the military forces and the non-combatant populace are interdependent and intermingled. Does the state consider the conflict a Total War wherein

they mobilize the entire society, children and all? Can the non-combatants be separated from the war industry and fielded forces?

The three bombardment categories and six elements affecting the morality of aerial bombardment make the targeteers' duties difficult at best. Our position that morality should be strived for, if not mandated, is further reinforced by the history of aerial bombardment as it has been applied since the invention of the airplane.

Part 7

A Historical Perspective of Morality in Aerial Warfare

The effectiveness of strategic bombing throughout history has been questionable at best. Although considered a requirement in today's warfare, its effectiveness throughout time has been inconclusive taken apart from other service components' contributions in the strategic realm. From the start in WWI, strategic bombardment was an ineffective "experiment" lacking needed weapons effects and precision. Mostly used as a terror weapon against the civilian populace, aerial bombardment was simply a nuisance to the enemy state until the 1930s with the real first look occurring in WWII.¹

World War II

The first truly concentrated effort to conduct aerial bombardment was during WW II. For Allied forces, there were two distinct approaches to the most effective means to force the Axis Powers to succumb. The RAF applied Douhetian theories attempting to break and dislocate the morale of the German people from their government and force them to stop the war from within. The USAAF, on the other hand, attempted to defeat the enemy through industrial-based strategic bombing believing it the most effective way to defeat the German war-making machine. Which one was more effective is debatable, but one thing was conclusive: the required accuracy needed to destroy "critical nodes" was not technologically available, rendering both concepts essentially

Douhetian in practice; we bombed the civilian populace.² At the conclusion of the European strategic bombardment campaign, the USAAF attitude changed for the Pacific Theater.

Initially, the USAAF attempted industrial based bombing against Japan but had little success. The strategy immediately changed to incendiary-initiated fire bombing to hasten the ending of the war because the Japanese industry was dispersed, and by the end of the war, being conducted out of cottages. The great loss of Japanese civilian life in addition to the use of atomic weapons left the Japanese unable to support itself and succumbing to an unconditional surrender prior to invasion.³

Korea

At the outset, the air campaign strategy in Korea was industrial based but failed because Korea had little supporting war industry in its agrarian society. When the war stabilized along the 38th parallel, the strategic and interdiction campaign had little effect on the outcome of any battle. Enemy forces needed little to sustain themselves, and the lack of suitable targets that were politically acceptable to strike as well as the lack of accurate weapons rendered aerial bombardment ineffective in changing the static front or the outcome of the war.⁴

Vietnam

Vietnam will be remembered for the many constraints and restraints levied upon the airmen fighting the air campaign. According to Earl H Tilford, airpower was considered pivotal, not decisive in the Vietnam conflict. He further claimed that the USAF applied inappropriate doctrine used in WWII and the Cold War against a pre-industrial and agrarian based Vietnam. Adding to the frustration, technology limited airpower from adequately striking the desired

targets it sought.⁵ However, as the Vietnamese shifted their approach towards a conventional war, airpower adapted and became more effective. The introduction of laser-guided PGMs displayed the capabilities of precision warfare, setting the pace for future conflicts.

Up to this point in the history of strategic conventional aerial warfare, conflicts either lacked a sufficient amount of precision weapons or the enemy state lacked an industrial base that could be strategically attacked to display the potential of airpower and the effects of strategic attack. Desert Storm proved to be the first test of modern airpower theories.

DESERT STORM

The first modern use of airpower that could accurately assess the industrial-based bombing theory was Operation Desert Storm. The heavy reliance on PGMs along with the media coverage of the war ushered in a new era of warfare to the world. The air campaign was essentially based on Warden's 5-ring analysis with a few exceptions.

The Coalition strategic air plan sought to dislodge the Iraqi forces from Kuwait by attacking key Iraqi targets such as leadership and command and control systems; key nuclear, biological, chemical, electrical, military, and oil production facilities; bridges, railroads, and port infrastructure; and air defense, naval, missile, and ground forces, particularly the Republican Guard.⁶ The difference from Warden's 5-ring theory was the initial and continual attacks on the Iraqi fielded forces.

Coalition commanders attempted to dismember Iraqi air defenses and at the same time attack targets across the entire spectrum of target sets in parallel attacks. The greatest effort was directed against air defenses, airfields, and command elements of the Iraqi regime.⁷

The nature of strategic targets in Iraq required careful weaponeering and accuracy to achieve the desired effects, to avoid excessive collateral damage, and to reduce the risk of delivery

aircraft having to conduct repeated attacks. The Desert Storm plan went far beyond stated military objective of forcing Iraqi military forces out of Kuwait and restoring Kuwait's territorial integrity. The target sets identified by the targeteers included a vast array of targets within the state of Iraq to separate the national leadership from the fielded forces in Kuwait along with the people of Iraq.⁸

To achieve only that limited end, the war would have been far more limited in scope, duration, and lives lost on both sides. In effect, Warden's staff developed their air plan with the intent of accomplishing more than the US President's objectives with airpower alone.⁹ They believed that strikes against Iraqi leadership could induce a coup or revolt that resulted in a government more amenable to our demands.¹⁰

In conjunction with the strategic air plan, the planners also anticipated the use of Iraqi weapons of mass destruction, primarily chemical weapons. They initially had two Air Tasking Orders (ATOs), a "Punishment ATO" and "D-Day" ATO. The first was a retaliatory strike if the Iraqis used chemical weapons and the second for an offensive strike to remove Iraq from Kuwait. The 17 targets were oil, military, and one political target – the president.¹¹ The last target is quite interesting for Executive order 12333 prohibits US government involvement in assassinations.¹² However, Saddam was targeted as the supreme military commander, so he was legally targetable in war.

The attack methods were not designed for target/weapon effects only. The Coalition commanders were also very concerned about the safety of the airmen executing the attacks as well. Initially void of weapon release altitude restrictions for parts of the Coalition, there was an eventual medium altitude restriction that increased the survivability of the aircrew at the expense

of bombing accuracy. Unfortunately, the weather was as poor as it had ever been on record in Iraq making the rule much more frustrating to air planners.¹³

Results of the Air Attacks against the Iraqi Forces

If aerial bombardment had a chance of being decisive, the DS environment gave the Coalition Air Forces the best opportunity ever. However, the effectiveness of the air attacks on leadership could not be quantified, not even roughly.¹⁴ Some target systems succumbed quickly – electrical power for example. Others required repeated strikes, for example hardened shelters.¹⁵

The air attacks rapidly shut down the electrical system forcing Iraq to use back-up power, yet the Iraqis quickly restored this damage without external assistance, showing that the Coalition inflicted little long term capability on the Iraqi power system.¹⁶ Some critics quoted in the GWAPS stated that the strategic air campaign resulted in very few Iraqi civilian casualties due to power outages. However, other critics believe that the loss of electrical power “contributed to” 70-90,000 postwar civilian deaths above normal mortality rates between Apr-Dec 1991 due to the lack of water purification and sewage treatment. According to NBC News Military Analyst Bill Arkin, the final death toll was 111,000.¹⁷ In conjunction with electrical power, 90% of oil refining capacity was inoperative at war’s end. But by fall 1992, Iraq was producing enough oil for their own domestic and Jordan’s needs.¹⁸

A major flaw with this whole process is inaccurate intelligence and BDA. The same sensors and sources, which are used to build target packages, are used for BDA. If the process is inaccurate for one, it will likely be inaccurate for the other. The nature of the strategic targets in Iraq required precise intelligence and careful weaponeering to achieve the desired effects and accuracy, to avoid excessive collateral damage, and to reduce the risk of delivery aircraft having to conduct repeated attacks.

The DS targeteers did not attempt to avoid inconvenience of the population but wished to inflict disruption and a feeling of helplessness on the public without bringing about severe suffering in hopes of weakening Hussein's grip on the people.¹⁹ This was targeting of the morale of the populace, even if it was only considered a secondary weapons effect? How far did the planners intend to go to break the morale? The Coalition did target railroads and bridges that could directly affect the Iraqi people.²⁰ This particular target set can be analyzed in two ways: how did they survive before the railroads and bridges were built; or has the city grown in populace so much that the people need these assets to fulfill their basic human needs? Although these "additional" weapons effects were readily accepted by the campaign planners, they did try to avoid civilian casualties and long term damage to the Iraqi economy while visibly demonstrating our intention to attack Hussein, not the Iraqi people.²¹

Unfortunately, there were two instances during the air war that questioned the morality of targeting beyond the stated objectives in war. The first instance was an attack on the Al Firdos bunker just prior to start of the ground invasion. Unbeknownst to the targeteers, Iraqi non-combatants were in the bunker seeking shelter from air attacks that night. Several hundred of them were reported killed when two 2,000-pound bombs destroyed their bunker. Acknowledging that intelligence cannot determine where non-combatants are in relation to targets, Washington tightened control on any subsequent air attacks on downtown Baghdad.²²

The second incident was the famous "highway of death" that led from Kuwait City to Al Basra where many vehicles, in apparent retreat from Kuwait, were targeted and destroyed killing many fleeing soldiers. Although they were retreating, they were moving towards many of our friendly ground forces in position between Al Basra and Baghdad.²³ Would it have been moral

to allow them to “retreat” peacefully if that was their intention and only engage them if they attack our forces during their “retreat?”

The rest of the strategic air campaign had some rather interesting results that differed dramatically from the effects they sought. The attacks on Iraqi leadership, communications, SCUDs, and bridges had questionable results. As stated before, attacks on electricity went very well but were inconclusive as to what actually shut the power down. Was it the apparent decimation of the power grids or Hussein himself shutting the power down to forego further air attacks on that system? The attack on oil production, supply, and distribution went well, but was virtually ineffective in the outcome of the conflict due to the short duration of the war. Although Iraq’s intent to use chemicals was unknown, attacks on chemical weapons production, supply and weaponization appeared to work because the air campaign apparently deterred their use.²⁴

All of the above operations had varying effects but one target set stood out as the most decisive in the outcome of the entire conflict. The attacks on the Iraqi fielded forces were very effective resulting in at least 50% armor vehicle attrition before the start of the ground war.²⁵ This is quite ironic as it is the outer, and supposedly least influential, ring in Warden’s theory, yet attacks on this ring had the most successful results. Adding to the irony, they were not listed on the “strategic” target list because of the tactical nature and mobility.

The bottom line from the DS strategic aerial bombardment campaign is that the “strategic” portion did aid in the speed and decisiveness of the victory yet to what extent may never be accurately known. What is conclusively known is that the use of air power against the fielded forces was very effective and had a decisive impact on the outcome of the war. Attacks against fielded forces yielded extremely low collateral damage due to the lack of non-combatants in the vicinity of fielded forces, yet achieved a major objective, that of weakening the Iraqi army.

ALLIED FORCE

Operation ALLIED FORCE presented military officers with two particularly important moral issues. The first issue was how to morally translate political objectives into military strategies and how to target for effect within moral (*jus in bello*) guidelines. The second issue related to the necessity to be honest and consistent in selecting military objectives to carry out political guidelines.

On March 24, 1999, President Clinton stated 3 objectives for United States forces:

1. To demonstrate the seriousness of NATO's opposition to [the Serb] aggression [against Kosovar Albanians] and [NATO's] support for peace.
2. To deter the Serbs from attacking helpless Kosovar Albanians and to make them [the Serbs] pay a price for their actions if they continued to do so.
3. To damage Serbia's capacity to wage war against Kosovo by seriously diminishing [Serbia's] military capabilities.²⁶

"By late April, NATO had more combat planes than it had targets to hit. Both Clark and the airmen putting together each day's tasking orders were frustrated."²⁷ "NATO began the war over Kosovo with a one-volume Master Target File containing 169 targets. It ended the war with more than 976, filling six volumes."²⁸ With so few targets and so many planes, and ever more flowing into theater, the few approved targets were continually attacked, even after they were functionally or totally destroyed. It appeared as though the alliance's objective was a particular sortie rate, rather than a desired effect or end state. From a moral standpoint, this was arguably a waste of resources and needlessly threatened the lives of NATO airmen and Yugoslav and Albanian non-combatants.

Planners should never have sent a large number of those targets forward due to lack of military necessity and likelihood of non-proportional collateral damage to targets whose importance could not be tied to the objectives. The USAF recognizes *persistence* as a tenet of

aerospace power. However, persistence does not require or necessitate targets be re-attacked after desired effects are achieved.

Bryan J. Hehir, Professor at the Weatherhead Center for International Affairs at Harvard, and noted author on morality and Just War, wrote of the risks of the NATO policy on non-combatant casualties in the May, 1999 issue of America magazine. He provides as an example the cruise missile attack on the Serbian Internal Ministry Center in Belgrade. He cites the legitimacy of the target and mentions that the hospital on the same city block was not hit, but he questions the risk involved. “More precisely, if the target comes up again for a strike (as it could) should the risk be run?” And on the same page, he “found the willingness to attack [the Serbian national television studio] when staffed by civilian technicians a fateful step in the direction of relaxing crucial restraints on power.”²⁹

As if in response to Hehir, the world witnessed numerous incidents of collateral damage and non-combatant deaths. The question came back to Hehir’s original challenge: is it worth the risk to go back to reattack targets near non-combatant concentrations? We would argue that when people are displaced and must move to the mountains and chase after chickens for food, and have no resources with which to repair their windows or roofs due to repeated bombings of targets that had no bearing on military objectives, we cause an unnecessary burden on innocents. Repeated strikes against targets whose necessity does not outweigh proportional collateral damage may not have been illegal, but they were not moral either.

Some examples of known collateral damage follow:

Nis (6 May) – NATO targeted the airfield and a radio relay tower on this day. One of the bombs intended for the tower fell short and hit populated area. Most likely the laser guidance package attenuated on clouds and caused the bomb to explode prior to the intended target.

According to a NATO targeteer, the tower had just been added to the target list, and although not necessary to achieve strategic objectives, it was necessary to give the large numbers of aircraft viable targets to attack.³⁰

Korisa (13 May) – Serb forces had been using this farmhouse as a command post, but filled it with “human shields” prior to the NATO attack. NATO cannot be faulted for this action.³¹

Surdulica old peoples’ home (30 May) – NATO says this was an attack against a Yugoslav barracks/command post which “shared a perimeter” with the sanitorium. NATO knew that the barracks was empty and had been targeted previously.³² The military necessity of attacking this target, known to be empty, multiple times, so close to a retirement home, throws the proportionality scale out of balance.

Novi Pazar (31 May) – missile/bomb hit an apartment block reportedly killing at least 11 people and injuring more than 20 others. The targets were a publishing house, printing presses and a regional television and radio headquarters close to a hospital and bus station. At his daily press briefing the following day, NATO Spokesman Jamie Shea said one of the bombs went 60 meters (less than 200 ft) long.³³ Although 19 of the 20 bombs hit their intended targets, we question whether those targets were so important to necessitate 20 bombs be targeted in a residential area so close to apartment blocks, a bus station and a hospital.

In another case, NATO repeatedly bombed a barracks in Leskovac, which was empty 6 months before the bombing started.³⁴ The attacks left few windows on any homes in the city and disrupted medical care at the nearby hospital for the duration of the conflict.³⁵

Much of the difficulty came in the planning process itself and likely led to a certain immoral nature of the conduct of the war. According to a briefing by Maj Gen Hobbins, Director of Operations for US Air Forces in Europe prior to and during Allied Force, the planning process

skipped all the steps that would have ensured non-combatant protection.³⁶ Gen Hobbins briefed the AF Doctrine Symposium that the planning process skipped from determining objectives directly to picking targets without any attempt to match desired effects with appropriate weapons or platforms. The NATO Chief of Targets agreed, saying that there were so many targets added to the list so quickly in order to build up a large list, that there was not enough time to accomplish a proper workup on them all.³⁷ This non-doctrinal process resulted in a waste of resources (bombs, fuel) and lives (both of non-combatants on the ground and airmen flying through threats) without achieving any operational or strategic effect.

In fact, Serbian armored forces, which moved into Kosovo to conduct the worst atrocities after the first night of ALLIED FORCE, were garrisoned outside Kosovo and parked in cantonments when NATO flew the initial sorties into Serbia.³⁸ Had NATO flown against those forces the first night, rather than attack targets in Belgrade, allied air forces might have achieved all three stated objectives in far less time while minimizing (likely eliminating) any collateral damage and leaving Serbia's infrastructure intact. However, we initially ignored those forces in favor of infrastructure such as bridges and factories.

Destroying bridges in Novi Sad, hundreds of miles north of Kosovo had no impact on forces already in the province. NATO said that the result was "that the citizens of Novi Sad were inconvenienced by the loss of the easiest routes to Belgrade".³⁹ Again, morality requires that those targets be necessary. Inconveniencing the people of Novi Sad was not one of the stated objectives.

Far beyond solely hurting the people of Yugoslavia, destroying bridges on the Danube and along the main north-south line of communication in the region adversely affected commerce and trade in all of central and Eastern Europe. The Danube was a major route for transport of

goods between the Black Sea and Central Europe, and now that link is closed until the Danube can be cleared. The port of Thessaloniki, Greece, once the major port for goods to enter Central Europe, has been seriously impacted since the roads through Yugoslavia are impassable due to dropped bridges.⁴⁰ Goods now must go through Italy and around through Austria to the east instead of up through Yugoslavia as in the past.

Because target selection became an issue, so did the process by which targets came to be approved. Civilian leadership inserted itself into a targeting process what would heretofore only be accepted as the military's responsibility. When casualties among non-combatants began to rise, civilian leaders began to ask what we were hitting and why we were hitting it. When those civilian leaders were not satisfied that target necessity was properly balanced against proportionality of non-combatant casualties, they exercised their rights as authority over the military. Jaques Chirac, Tony Blair, and Bill Clinton all determined to "review targets that might cause high casualties or affect a large number of civilians."⁴¹

This policy of civilian review appeared to be needless micro-management of operations by leadership. "Had he been free to structure the air effort as he wanted, Short would have arranged for the leaders in Belgrade to wake up "after the first night ... to a city that was smoking. No power to the refrigerator and ... no way to get to work." He believes that in very short order, Milosevic's staunchest supporters would have been demanding that he justify the benefits of ethnic cleansing, given the cost."⁴² We contend such a strategy would not have been moral within the context of this war, which is why civilian leaders from the US, UK, and France all retained target approval authority.

The second broader issue is properly selecting objectives in war that can be obtained justly, and honestly conveying those objectives down the chain-of-command to military planners as

well as to the public back home. This issue itself can best be separated into two sub-issues. First, our military and civilian leadership must be consistent in the articulation and transmission of objectives. This act should drive military planners to accomplish the stated goals and especially in a just manner. Second, we should not expand our actions beyond those stated objectives without openly stating them.

In the first case, the political objectives stated by President Clinton did not match the political objectives stated by NATO Secretary General Javier Solana on 1 Apr 99:

1. Stop the killing in Kosovo
2. End the refugee crisis; make it possible for them to return
3. Create conditions for political solutions based on Rambouillet Accord⁴³

This seemingly small difference in wording from President Clinton's own words a few days earlier could have been enough to cause a serious difference of opinion in the manner in which this war was to be conducted. Naturally, other coalition nations' leadership and militaries would see different objectives requiring different strategies. US military planners were told to damage Serbia's capacity to wage war, subjecting a broad array of targets to potential attack. Other NATO countries, on the other hand, did not recognize that US objective as a NATO objective and would not agree to certain targets being struck. This conflict in guidance alone could insert friction into a multinational planning staff and into the coalition as a whole.

The second moral sub-issue with objective determination is being forthright with your own military people and support base back home about your intentions. Publications repeatedly quoted NATO leadership on how we didn't want to harm civilians and how that was never the alliance's aim. For example, on the 25th of March, 1999, Gen Clark, speaking to reporters at NATO Headquarters in Brussels, said that the air war was "not an attack against the Serb

people.” He further stated NATO “was taking all possible measures to minimize collateral damage, damage to innocent civilians or nearby property that’s not associated with the target.”⁴⁴

Yet many of the same publications show that later in the war NATO leadership accepted the notion that we needed to take the war to the people. “While avoiding civilian deaths, they were trying to inflict a certain amount of pain on the Serbian people.”⁴⁵ Also, “The West hopes that Serbs, seeing hospitals and businesses without water and electricity, will turn their wrath on” Milosevic.⁴⁶ However, Karl Mueller, of the School of Advanced Airpower Studies at Maxwell Air Force Base, says, “attacks on electrical power mainly serve to damage the economy. Its is not clear that this goal is worth pursuing because damage to electrical power has very serious collateral damage effects due to its impact on medical care and other essential services for civilians.”⁴⁷

We either need to be up front with what our objectives are, or not attack that which does not lead to a rapid end to the war. If we cannot do the former for fear of how it will play out on CNN, then perhaps it is wrong. The Washington Post mentions that “NATO commanders were never sure exactly what it would take to break the will of” Milosevic.⁴⁸ This desire to make life for the Serbian people unbearable enough to overthrow Milosevic certainly led to a strategy that diverted significant resources away from attacking fielded forces, and wasted fuel and put aircrews in harm’s way to achieve immeasurable results on an objective that was not stated by our civilian leadership. If we cannot be truthful about what we think we want to do, then maybe there is strong reasoning for not doing that act.

Long-term effects of this type of operation are yet unknown. Even though the opposition was unable to unite, the Yugoslav people had a single foe before the war: Milosevic. Today, because of collateral damage to their country after 78 days of bombardment, Yugoslavs have two

enemies: Milosevic and NATO. Another long-term impact must be our ability to learn from the past. Yet the official DoD Lessons Learned for Allied Force failed to mention non-combatant casualties and how to reduce them anywhere within its pages.⁴⁹

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Part 8

Moral Implications of Aerial Bombardment With Respect to Non-Combatants

So how does the previous discussion translate into moral targeting? Morality must be applied to aerial bombardment, however, today any morally acceptable target list is very limited given current weapons systems available in the inventory, our intelligence capabilities, and most importantly our acceptance of the notion that there will always be some level of civilian casualties in a war.

Meilinger believes air warfare is executed in an international legal vacuum. He says morality must be used to make up for this lack of international legal norms and standards.¹ Immoral acts in this case are defined as any which result in detrimental effects of aerial warfare that causes short or long term injury, suffering, displacement, or death to non-combatants. Michael Walzer argues that “a legitimate act of war is one that does not violate the rights of the people against whom it is directed...This fundamental principle underlies and shapes the judgments we make in wartime conduct...When soldiers respect these bans, they are not only acting kindly or gently or magnanimously; they are acting justly.”² The following perspectives emphasize historical Just War protections of non-combatants:

Not a line combatant. “The first principle of the war convention is that, once the war has begun, soldiers are subject to attack at any time (unless they are wounded or captured).³ Civilians, however, “ought not to be attacked if their activities can be stopped, or their products

seized or destroyed, in some other way and without significant risk. The laws of war have regularly recognized this obligation.⁴

Not in Military Industry. “The relevant distinction is not between those who work for the war effort and those who do not, but between those who make what soldiers need to fight and those who make what they need to live, like the rest of us. When it is militarily necessary, workers in a tank factory can be attacked and killed, but not workers in a food processing plant...They can be attacked only in their factory (not in their homes) and only when they are actually engaged in activities threatening or harmful to their enemies.”⁵

Not solely tied to the military for any service provided. Comprised of the general populace who have no professional ties to the military, mainly including the elderly, women, and children. They (noncombatants) can never be the object or targets of military activity.⁶

Notes

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Part 9

The Application of Morality towards Future Air Operations

Applying morality to aerial warfare, we must consider several important issues that will lead us down the road towards minimizing non-combatant casualties. Three of these issues are interdependence, both with a country and in the global environment, emerging precision weapons technologies, both lethal and non-lethal, and the intelligence necessary to leverage the other two.

We must acknowledge that while Warden's 5 ring theory may have been a brilliant construct for analyzing an enemy's state in the 1980s and 1990s, it simply does not apply in today's interdependent environment. We must also recognize that societies are nearly completely interconnected and interdependent, both within a country and between countries. In today's global environment, one can argue that the five rings have been replaced by a sphere in which all elements of a society are interconnected, and attacking one will necessarily impact an element that is not openly related to the war effort. This is a moral dilemma and not one the US should shy from as military planners and leaders. Next, we need to educate our officers and civilian leaders alike on the fact that effects on a given target in one country can have a cascading effect not only within that country, but on surrounding states as well.

Destroyed factories can no longer produce goods for the enemy state, but they also fail to produce goods for export. Economies that are closely tied, such as Yugoslavia and Greece, or

Yugoslavia and Croatia, have serious impact on neighboring states when they are shut down during war. A paper recently written at the Greek Air War College described the impact of the war on the Greek economy and the need for the EU to help rebuild Yugoslavia's infrastructure to return levels of commerce and industry to their pre-war levels.¹

To apply morality to an aerial bombardment campaign, we must use all technologies available to wage the most effective campaign possible all the while minimizing or eliminating the exposure of weapons effects to non-combatants. Political objectives and guidance must be developed into military objectives and then into military strategies to achieve desired effects. Target sets can then be developed and morality applied to gain the desired effects against each target within the target sets.

All blast/fragmentary weapons must only be used where their effects have no chance of directly or indirectly affecting non-combatants in the long or short term. In other words, no non-proportional or justifiable injury or death due to collateral damage. For all other targets that are in close proximity to non-combatants, we must either utilize non-lethal forms of warfare that affect military functions only, not any functions that affect non-combatants, or develop and procure lethal means to destroy targets while minimizing collateral damage. Several such concepts, such as the small smart bomb or information warfare applications have either been successfully tested or are currently in development.

The Air Force Research Laboratory's (AFRL) Armaments Directorate is developing and testing several weapons concepts that can achieve precision effects with very small warheads or with non-lethal means. The Small Smart Bomb (SSB) program delivers a small, very hardened weapon with extreme precision, yet with a very small warhead. The program makes use of technology to increase lethality with a much smaller weapon. No longer will a weaponeer be

forced to select multiple large blast/fragmentary weapons in the 500 and 2000 pound class range to achieve an effect on point targets. In past operations, to be sure we achieved an effect, we needed to drop many large weapons to ensure its destruction, regardless the desired effect. But with the SSB, an F-16 could carry several of these weapons on smart racks, and employ them on hardened targets with minimum collateral damage.²

The SSB is merely six feet long and 6 inches in diameter with only 50-pounds of explosive in the warhead. However, the SSB's shape and design materials make it extremely capable of penetrating hardened targets. Its small warhead is more than capable of destroying aircraft inside a hardened shelter or equipment in a command post, yet without producing the devastating blast effects that damage surrounding buildings.³

In its first test at the Eglin AFB weapons test range, an F-16 delivered a precision-guided SSB from 40,000 feet altitude, and through a solid deck of weather. The target was an aircraft inside a hardened aircraft shelter. The weapon penetrated the roof of the hardened shelter and fuzed inside, destroying the aircraft. By the time the weapon hit the target 100 seconds later, the launching aircraft was 25 miles from the target, providing not merely greatly reduced risk of collateral damage on the ground, but greatly increased safety of aircrews as well.⁴

In Allied Force, for example, the NATO leadership stated that the goal of dropping some major bridges in Yugoslavia was to destroy the fiber optic cables running through the bridges. Although differential GPS, which gives the SSB its greatest accuracy, may not be available during war, SSB technology would be far more likely to hit the cable pipe in the bridge, yet leave the bridge standing.⁵ To hit a television and radio headquarters across the street from a hospital, the SSB could achieve a desired effect on the intended target while leaving the hospital undamaged.

The Air Force and DARPA are also developing small Unpiloted Combat Aerial Vehicles (UCAV) with long range, tremendous accuracy, and precision effects capability only dreamed of in years past. These weapons which can be employed from extremely long range are capable of delivering a small warhead onto a hardened target to achieve the desired effect, keep friendly aircrew out of harm's way and tremendously limiting NON-COMBATANT casualties. A planned guidance package would compare a preprogrammed image of the target with the view from the sensor package to ensure precision engagement.⁶

There are numerous efforts under way to develop and protect against information attack as well. If it is possible for teenage hackers to shut down large sections of commerce and information activities on the Internet, we can do likewise to enemy systems without killing civilians. However, our laws and international agreements restrain much of that activity. Innovations like these are often scoffed off as weapons that can never get people to change their hearts and minds on an issue of vital importance to the US. However, we must remember that the critical measurable for military planners and those who command forces is achieving objectives through desired effects.

If it is possible to achieve a JFACC's or JFC's objectives with minimum risk to US forces and zero collateral damage, then that is a noble and worthy goal. Following such a strategy would follow several principles of war, especially economy of force, and security, while achieving the most important – objective. We agree with the officers who remind us that our mission is to achieve the objectives sent down from our political leaders and refined by combatant commanders. We merely argue that it is possible to do so, given today's technology, with far less risk to the military than in the past, and with far greater discrimination against non-combatant casualties than ever. We must convince the officers who write the requirements that

what we need to achieve is a certain effect, not necessarily the total destruction of a target set, which will result in numerous non-combatant casualties. Those officers who write the requirements will accept this reasoning when they can be sure that we have the accurate intelligence to target for effect and then determine those effects through innovative BDA.

That last piece of the puzzle is today most critical. Colonel Philip Meilinger said in his book 10 Propositions Regarding Airpower, that “airpower is targeting, targeting is intelligence, and intelligence is analyzing the effects of air operations”.⁷ Many Air Force operations planners instinctively increase the number of bombs they believe a target will require for destruction because they are not confident in our analysis and effects-determination capability. Essentially, they do not trust the BDA process and feel it is easier and more practical to make sure the target is completely destroyed rather than searching for the effect. This leads to re-attacks on many targets like we discussed in the Allied Force section. Meilinger gives another example. Air Forces struck the Iraqi intelligence headquarters during Desert Storm. Intelligence assessed the building as 25% destroyed since one-fourth of the building was leveled. However, the critical elements of the building were in that 25%.⁸

Sending more aircraft to hit the rest of the building violate the principles of objective (it was already achieved) and economy of force (resources sent back to the same target rather than another which was not yet effectively hit), and security (our airmen had to fly through heavy defenses to go back to that target). This is only looking from the standpoint of US lives at risk. Is it moral to risk non-combatant casualties to re-attack that target after the desired effect is achieved? If we did not know the effects were achieved, there would be strong argument that sending those planes and crews back to Baghdad is moral. Yet in this case hindsight should help us look not only backwards, but to the future to develop effective BDA methodology.

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1. Karadimos, 5.
 2. Michael Duvall, Small Smart Bomb Integrating Concept IPT Leader, Air Force Research Laboratory, interview by author, 10 April, 2000.
 3. Duvall interview.
 4. Duvall interview.
 5. Duvall interview.
 6. Lt. Col. Mike Leahy, UCAV ATD Program Manager, Defense Advanced Research Projects Agency, interview by author, 17 April, 2000.
 7. Col Phillip Meilinger, *10 Propositions Regarding Airpower*, (Maxwell AFB, Ala.: Air Force History and Museums Program, 1995) 20.
 8. Meilinger, *10 Propositions Regarding Air Power*, 25.

Part 10

CONCLUSION

The USAF must infuse a high degree of morality in aerial bombardment operations. Today's world is interdependent like at no time in our past. There was an age when the captains of two armies would face one-another at dawn and determine the rules for that day's engagement. In those days, no man questioned the immorality of killing non-combatants. Today, however, we have allowed ourselves as a people to accept a certain level of civilian casualties as inevitable in the field of conflict. We argue that those casualties are not necessary. There are, of course, some civilians who directly aid the war effort and are legitimate targets in a war. However, for the vast majority of the population, there is no inherent right to be threatened with loss of life, personal injury, or even loss of livelihood because their country or the neighboring country is at war with the US.

We do not propose that all non-combatant casualties can be avoided. We do say that casualties which are not proportional to the necessity of the attacked target are immoral. To wage a moral aerial bombardment operation, we must carefully choose the objectives that, if achieved, will lead to the desired end state. We must weigh necessity against proportionality in seeking those objectives. If it is likely that non-combatants will be affected in striking a target, we propose that the proportionality decision be made no lower than at the JFACC level. We also

recognize that emerging technologies will make it possible to achieve desired effects with far lower levels of collateral damage, and should therefore be pursued.

American decision-makers must recognize that military actions have a far greater influence beyond the battlefield than ever before and affect people beyond the borders of our enemy. We also must recognize that certain actions are just wrong and immoral. We simply should not do them.

There are ways to achieve our military objectives given today's technology and to minimize the impact on non-combatants. The US Air Force should pursue those technologies with vigor. They will save the military and our country much treasure, not only in the form of money, but in the lives of our military men and women by not putting them in harm's way to achieve desired effects.

Likewise, our leaders will be able to truthfully look into a camera and tell the people in our enemy state that our struggle is not with them, but with their government and military. And when the hospital across the street from a major target is spared while the target effect is achieved, they will believe us, and our moral standing in the world will be preserved.

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