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The Problem with "Precision": Managing Expectations for Air Power

by

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Much of the literature concerning aviation-related civilian casualties of the past decade centers on ethics, human rights, laws of warfare, and the number of occurrences. A critical perspective is missing from this discussion, that of the Airman. An Airman’s voice is needed, not only to ground the discussion in practical reality, but also to place into context the development of unrealistic public expectations - expectations that work against airpower’s ability to achieve political aims. This paper examines the manner in which civilian casualty avoidance has affected airpower’s effectiveness in achieving policy objectives in Afghanistan today, and how atrophy in strategic communications has failed to create realistic public expectations. The author identifies four areas where a change in perspective of how airpower is viewed would be beneficial: the execution of airpower, the perspective of scholars, terminology used by airpower advocates, and the United States’ approach to strategic communication. Changing mindsets is these areas will help create realistic expectations and improve the overall effectiveness of airpower; while preserving the military’s quest for perfection and meeting the American desire for moral exceptionalism in warfare.

The Problem with "Precision": Managing Expectations for Air Power

> I received a call from one of my Joint Terminal Attack Controllers (JTAC). He was excited. Not because he had dropped his first bomb in combat or because he had successfully prosecuted a high value target, but because he hadn't. He exclaimed, "Ma'am you'd be proud of me!" and proceeded to tell me how he and the ground force commander had an enemy insurgent in their sights and how the unmanned aerial vehicle overhead had contributed to the positive identification (PID) of one of the region's IED (improvised explosive device) emplacers. This particular individual had been farming the roads of the region daily in the hopes of a successful attack on coalition forces. However, instead of being permanently removed from the battlefield, this insurgent would live to fight another day because the JTAC advised the ground commander against a strike due to the likelihood of causing civilian casualties. The ground commander agreed and simply stated, "let him go." Though both the ground force commander and the JTAC regretted allowing an enemy combatant to continue to threaten both the people in the nearby village and coalition forces, they knew this was the right decision. They understood that it is often far better to allow the enemy to walk away than to chance possible harm to those they are charged to protect; even if it means placing friendly forces at increased risk by doing so. The JTAC did this proudly knowing that professionalism in warfare is difficult, but paramount. Proudly, because he not only understood the tactical perspective of airpower employment, but the strategic significance that misapplication of that power could produce. This is the mindset of our warfighters in Afghanistan today. A mindset that makes the battle-hardened warrior proud of withholding lethal effects when warranted. The mindset that allows the ground force commander to say "let him go."
>
> – Personal communication, November 13, 2011[1]

Much of the literature concerning aviation-related civilian casualties of the past decade reveals a discourse centered on the norms of ethics, human rights, laws of warfare, and the numbers of civilian casualties. Studies such as those by Peter Adey, Mark Whitehead, and Alison Williams have focused on the "politicism, practices, and ethics surrounding the target."[2] Patricia Owens' study suggests "civilian deaths are made permissible, not impermissible, when constructed as *accidents*."[3] Maja Zehfuss explored the influence that precision-guided weapons have had on Western ethics.[4]

Michael Schmitt examined the "aspects of international humanitarian law" and "its bearing on precision attacks."[5] Aldo Benini and Lawrence Moulton took a more general approach in their quantitative examination of Martin Shaw's research comparing pre-war loss of life to casualties caused during conflict from the perspective of the 1991 Gulf War, the 1999 Kosovo War, and the air war in Afghanistan in 2001.[6] Each author expressed what appears to be a generally-accepted truth: that aviation-related civilian casualties could be, and therefore should be, avoided. A critical perspective, however, is missing from this discussion, that of the Airmen. (The term *Airmen* is used here from the Air Forces perspective and as such encompasses all professionals involved in the application of airpower: aviators, JTACs, Air Liaison Officers, intelligence, targeteers, command and control personnel, etc.) By neglecting to examine the subject from the Airman's perspective, the existing studies fail to consider the current operational realities that shape 21st century airpower. As demonstrated in the opening vignette, Airmen employ meticulous measures in order to avoid civilian casualties when making the decision to apply airpower. These efforts need to be carefully considered by authors who address the issue of civilian casualties. The Airman's perspective is even more crucial when one considers all the authors noted above utilized specific technical aviation terms as part of the foundation upon which they built their conclusions. An Airmen's perspective is required to explain the operational realities that exist in today's use of airpower, especially as it applies to mitigating civilian casualties.

The following analysis will offer one aviator's perspective on the discussion. The author will explore five areas: 1) the history and rhetoric that have shaped public expectation regarding civilian casualties, 2) the technological capabilities and

terminology of precision bombing from an aviator's perspective, 3) the gap between the military and public understanding of airpower capabilities which has led to an overestimation of "precision bombing," 4) the military approach to mitigating aviation-related civilian casualties in Afghanistan, and 5) the history of strategic communications and its atrophy which has resulted in a failure to manage expectations for the application of airpower. Finally, the author will examine the mindset of Airmen in Afghanistan today, and recommend three additional areas in which a change in perspective could facilitate the application of airpower in future conflicts.

Evolution of Perceptions

Since the beginning of aviation, aviators have been attempting to describe the ethereal nature of the air domain. Wilbur Wright was perhaps the first to attempt to put into words the emotion that is inspired by manned flight when he stated, "more than anything else, the sensation is one of perfect peace mingled with an excitement that strains every nerve to the utmost, if you can conceive of such a combination."[7] Perhaps the most well known attempt to describe the passion of aviation is found in the opening lines of John Gillespie Magee's *High Flight*, "Oh! I have slipped the surly bonds of earth and danced the skies on laughter-silvered wings."[8] During the 1920s and 1930s, the glamour of aviation was embodied in early aviators such as Amelia Earhart and Charles Lindbergh. The media coverage of their exploits was similar to that of Hollywood stars, making them larger than life to the general public. One could sense and admire the overwhelming optimism with which these aviators tackled life. Their words not only inspired dreams, but set a stage for an even greater journey yet to come. One such example is Earhart's famous "paper tigers" speech, in which she described her motivation for her various exploits:

> The most difficult thing is the decision to act, the rest is merely tenacity. The fears are paper tigers. You can do anything you decide to do. You can act to change and control your life; and the procedure, the process is its own reward.[9]

This kind of passion, entwined with the bravado of accomplishing something that once was deemed impossible, forged the indelible image of the aviator in the public mind. It is not surprising that the leading airpower advocates were caught up in this public excitement for early aviation and conveyed a similar passion, optimism, and bravado. These emotions set the tone for future airpower advocates and created a tendency towards hyperbole, which has had a long-term effect on the general public's understanding of airpower, and expectations for its capabilities.

Guilo Douhet, one of the earliest airpower theorists, exhibited a passion which can be compared to that of a prophet. He believed so devoutly that airpower not only would revolutionize warfare but, if properly applied, it would be the basis upon which victory would be achieved. In his book *Command of the Air*, Douhet prophesized that airpower would "completely upset all forms of war so far known."[10] In his mind, airpower's invincibility was a foregone conclusion: "Nothing man can do on the surface of the earth can interfere with a plane in flight, moving freely in the third dimension."[11] Nations that did not pursue airpower risked failure in future conflicts as "an adequate national defense cannot be assured except by an aerial force." This was, of course, written before the advent of anti-aircraft artillery and surface-to-air missiles. One wonders whether Douhet, had he known of such inventions, would have changed his basic tenet, "To conquer the command of the air means victory; to be beaten in the air means defeat and acceptance of whatever terms the enemy may please to impose."[12] It is doubtful.

Another such acolyte of the skies was William “Billy” Mitchell. In his book *The Icarus Syndrome,* Carl Builder wrote that Mitchell “went well beyond the theoretical preaching of Douhet;” instead, he became more of a public advocate or publicist for airpower.[13] Mitchell created a divide between those in the know, the Airmen, and the mere mortals who were doomed to walk the earth on two legs, “Few outside of the air fraternity itself know or understand the dangers these men face.”[14] His persona only added to the audacity. Historian Roger Miller wrote of Mitchell, “His often irreverent, colorful statements made him popular with the press, who found him ‘good copy’.”[15] Mitchell expertly captured the daring and boldness of the early airmen - men who believed that the air domain must be experienced in order to be truly understood. Mitchell fueled animosity between what he called “us air people” and the “old well-established service that has gone on in the same rut of existence for decades.”[16] This new class of people, “air going people, have a spirit, language, and customs of their own.”[17]

Mitchell believed these aviators, this special class of people, with the “most powerful weapons ever devised by man” at their disposal, would be able to do what no other service had been able to accomplish, to “bring about quick and lasting results.”[18] One can argue that in the quest for an independent Air Force, Mitchell needed to continue this exaggerated condemnation of the other services, and to highlight the superior uniqueness of airpower. However, one might argue that he carried this line of rhetoric too far, when he claimed the older services were “psychologically unfit to develop this new arm to the fullest extent practicable.”[19]

Before a group that included the Secretary of War, Secretary of the Navy, Chief of Staff of the U.S. Army, Chief of the Air Service, pioneer airplane manufacturer Glenn Martin, senators, representatives, foreign observers, and reporters, Mitchell's sinking of the battleship *Ostfriesland*, became the movie reel representation of his belief that airpower could bring down entire fleets on its own.[20] Mitchell personally led the strike package of eleven aircraft which neatly accomplished this amazing task with only two bombs. "The second bomb exploded next to the *Ostfriesland,* and in a few minutes the ship rolled over and disappeared."[21] Mitchell reached for hyperbole, stating "sea craft of all kinds…including the most modern battleships, can be destroyed easily by bombs dropped from aircraft."[22] His claim was an overstatement to say the least, as the ship was anchored and did not employ defensive capabilities. But in Mitchell's mind, a win was a win, and he made sure everyone knew he had won. This type of rhetoric and flamboyancy eventually lead to his courts martial; however, it did not lead to the independent Air Force Mitchell so badly desired.[23] It can be argued that his efforts directly contributed to creating a lasting public mindset about what airpower could accomplish if employed correctly. Like Douhet, Mitchell believed command of the air would bring absolute victory, "Should a nation, attain complete control of the air, it could more nearly master the earth than has ever been the case in the past."[24]

The tendency to overstate the effectiveness of airpower did not end with the early theorists such as Douhet and Mitchell. Major General J.F.C. Fuller of the British Army alluded to the efficiency of airpower when he said, "Air warfare is a shot to the brain, not a hacking to pieces of the enemies' body."[25] In 1933, Winston Churchill added to the drama surrounding the rhetoric of airpower when he told the House of Commons,

"Airpower may either end war or end civilization."[26] In 1940, he lauded the pilots of the Battle of Britain, exclaiming the virtues of airpower and celebrating the Airmen's ability to protect the public with the now famous words, "Never in the field of human conflict was so much, owed by so many, to so few."[27] Given such artistic praise, it is easy to imagine 'the few' as knights soaring through the air on shining silver steeds. One can see these dramatic beginnings, bursting with anticipation and hyperbole, set the stage for great expectations when it came to the capabilities of airpower and the accuracy of aerial bombing.

Perhaps the most infamous contribution to the 'overstatement' of airpower capabilities came with the advent of the Norden bombsight prior to World War II. Its accuracy was described by *Time* magazine as being able to "place a bomb in a pickle barrel from 18,000-feet."[28] This inspirational marketing campaign elevated expectations for what the United States military called "strategic" bombing. The word itself, strategic, meant something different to the military than to the public. In military lexicon, "strategic" meant a systematic approach to targeting the enemy's capability to fight. In the mind of the general public, it came to imply an application of violence which could bring the enemy quickly to its knees. The most visible persons in aviation either failed to recognize this perception gap or cared nothing for bridging it. Perhaps their worldview was too greatly influenced, as historian Tami Davis Biddle postulates, by "perceived reality, selective memory, and filtering."[29]

Evolution of Precision Bombing

Former Chief of Staff of the US Army Air Corps, Major General James E. Fechet once wrote, "the airman riding high above the earth, that cities look like anthills, cannot aim his deadly cargo at armed males."[30] Ten years after those words were written the

World War II appropriation of the phrase “precision bombing” by U.S. airpower advocates only contributed to inflated expectations about discrimination in warfare. The World War II strategic bombing campaign was portrayed in film footage of skies dotted with bombers, escorts, free-falling bombs from open bomb bay doors, and impressive explosions on the ground below; what the films did not communicate was the primitive nature of the technology, and the resulting catastrophic destruction of those “strategic strikes.” In 1944, a raid of 47 B-29 Superfortress bombers using the Norden bombsight attacked the Yawata steel works; during that mission 376 bombs were dropped with only one impacting on the factory complex, a dismal 3,700 feet (1138 meters) from the desired point of impact.[31] On average, in order to destroy one building located in a factory complex, the Air Corps had to launch 3,024 aircraft and drop 9,070 bombs; the average circular error probable (CEP, an indicator of delivery accuracy) was 3,300 feet (1015 meters).[32]

Five years later, the Korean War saw the next leap in precision bombing and the furthering of the now independent United States Air Force’s over-claiming regarding airpower capabilities. The improving accuracy and lethality in weapons and delivery systems was lauded by Lieutenant General George Stratemeyer, Far East Air Force Commander, just two months after the start of the conflict. He stated, “practically all of the major industrial targets strategically important to the enemy forces and to their war potential have been neutralized.”[33] During 1950-1953, a “mere” 550 aircraft and 1,100 bombs could destroy a target. The accuracy had nearly tripled with an average CEP of 1,000 feet (308 meters), but the public’s expectations still outran operational capability by a wide margin.[34] American media coverage depicted the “mass nature” of the air

campaign through footage issued by the Department of Defense, depicting the resulting fires and explosions; however, the reality of the destruction was 'balanced' with the fact that "civilians had received ample warning on the bombing."[35]

The Vietnam conflict saw the early transition from World War II era bombing to the early ancestor of today's precision-guided munitions (PGMs), the laser-guided bomb (LGB). According to Paul Gillespie, the effort to destroy the Thang Hoa bridge epitomized the start of this transition.

> The bridge was first attacked by seventy-nine F-105 fighter-bombers on April 3, 1965. Despite dropping 638 750-pound bombs, firing three hundred rockets and missiles, and losing five aircraft in the process, the bridge, though hit several times, remained intact. Seven years and 869 sorties later, traffic was still crossing Thanh Hoa unimpeded.[36]

On June 10, 1972, the transition from precision bombing to PGMs was complete when the United States Air Force "completely destroyed the turbines and generators" of the Lang Chi hydroelectric power plant, "despite its close proximity to a major dam."[37] With a single flight of F-4 Phantoms dropping LGBs, they removed 75-percent of the country's electrical capacity without collateral damage to the dam. At the end of the Vietnam conflict, 44 aircraft with 176 bombs could destroy a target with an accuracy of 400 feet (123 meters).[38]

By 1990, the start of the Gulf War, "the capabilities of smart airplanes dropping dumb bombs" could place an unguided munition within 30 feet (9 meters) of the intended point of impact.[39] Even so, the first three weeks of the war did not produce the desired attrition rates against Iraq's 4,000 tanks and nearly 3,000 armored personnel carriers, so war planners invoked the technology of precision-guided munitions from F-111 aircraft with resounding success. The F-111s ended the war with "664 successful antitank missions, destroying 1,500 tanks, mechanized vehicles, and artillery pieces."[40]

A flight of four modern day fighters could destroy one target, which required over 3,000 bomber aircraft in World War II.

The results became even more impressive towards the end of the Gulf War when precision munitions were employed from one stealth fighter/bomber with the capability to destroy two targets within 10 feet (3 meters) accuracy.[41] The television footage of precision guided bombs "going through a ventilation shaft in an Iraqi office building" left an undeniable public impression of perfection.[42] F-117 stealth fighters were able to strike "sector operations centers, intercept operations centers, key command centers, and key communications nodes," with accuracy unrivaled in previous conflicts.[43] According to post war analysis "LGBs were as devastating to the Iraqis as they were unexpected."[44]

Operation Allied Force, the North Atlantic Treaty Organization's Air War over Serbia in 1999 saw the widespread use of Joint Directed Attack Munitions (JDAMs). With this new technology, advanced generation bombers (i.e. the B-2 Spirit) were able to place 90-percent of their weapons within 33 feet (10 meters) of the desired mean point of impact; although these advanced precision bombs only accounted for 34-percent of weapons employed, they destroyed 74-percent of the targets.[45] The author witnessed first-hand the precision of the Allied bombing campaign while visiting Serbia on a military-to-military exchange in 2008. The Serbian military escort provided a tour of downtown Belgrade, pointing out the still damaged Ministry of Defense, while the historic apartment blocks and oldest market in Serbia located just across the street, were unmarked.

In Afghanistan, that same level of accuracy is now common to all aircraft employing precision-guided munitions. While the specifics of aircraft to target ratios and CEP are classified, the fact remains that Coalition Forces are doing more with one Unmanned Aerial System and a single Hellfire missile than several bomber squadrons could have hoped to achieve in World War II. Given the copious literature extolling the accuracy and remarkable technological advances of airpower, it is easy to fall into the layman's trap of equating precision with perfection. In order to avoid this pitfall and to fully understand the reality of airpower capabilities, it is necessary to define the key terms as they are understood and used by a professional combat aviator.

Precision Defined

As aviation developed and the overestimation of airpower capabilities grew, so did the confusion about the way to understand civilian casualties in war. Norms of international justice demand discrimination. The problem is that operational realities limit what is possible in wartime scenarios. There are five terms regarding weapons effects, that must be understood in order to fully comprehend the process Airmen apply when prosecuting targets and striving to avoid civilian casualties. These are precision bombing, precision-guided munition, circular error probable, collateral damage, and risk estimate distance. The Department of Defense defines these terms in the *Dictionary of Military and Associated Terms*. Aviators, airpower experts and authors alike have utilized these definitions but through a slightly different lens.

Precision bombing is defined by the United States military as "bombing directed at a specific target."[46] From the aviator's perspective, the term "precision" does not imply, as one might assume, accuracy. Instead, the word precision exclusively pertains to a discriminate targeting process. By using a word that has such specific meaning in

the mind of most civilians, it is easy to see how a gap in understanding and expectations has been fostered. However, the concept of accuracy does come into play when defining Precision-guided munitions (PGM). A PGM is "a guided weapon intended to destroy a point target and minimize collateral damage."[47] The military sees a PGM as a type of guided weapon, while the public tends to focus their comprehension of this term on the word precision. The confusion is compounded when one attempts to understand the concept of minimizing collateral damage. In order to accomplish this task, the terms circular error probable, collateral damage, and risk estimate distance must be introduced.

Circular error probable (or CEP) is "an indicator of the delivery accuracy of a weapon system, used as a factor in determining probable damage to a target. It is the radius of a circle within which half of a missile's projectiles fall."[48] Some authors have used the definition of CEP in their research to imply that 50-percent of all weapons effects result in unintended consequences by falling outside the CEP distance (Adey, Whitehead & Williams, 2011; Conetta 2004; Owens, 2003; Zehfuss, 2010). This oversimplification in their analysis is perhaps derived from what Hugh Smith terms the general belief that technology limits the amount of "human cost."[49] To fully understand the concept of CEP, one must also understand collateral damage, the "unintentional or incidental injury or damage to persons or objects that would not be lawful military targets in the circumstances ruling at the time. Such damage is not unlawful so long as it is not excessive in light of the overall military advantage anticipated from the attack."[50] Together these terms define a circular radius in which Airmen must consider the possibility of unintended consequence…consequences to both civilians in the area, as

well as friendly forces. Understanding these terms allow combat aviators to apply both the concept of risk estimate distance, which is used to "estimate the danger to friendly troops," and collateral damage estimate in order to protect friendly forces and civilians while destroying the intended target.[51] The aviator applies this skill set and knowledge in the fluid combat environment through split-second decision-making based upon imperfect information. One example of the combat application of these concepts was provided by an F-15E aircrew.

> We were a flight of two [F-15s], tasked for close air support to friendly forces patrolling near several small villages. The terrain was fairly typical for Afghanistan, small enclaves of houses separated by fields. We received a radio call from the JTAC saying an insurgent had just launched an RPG [rocket propelled grenade] at the patrol and had hit one of the vehicles. We were immediately able to identify the insurgent, who was running across the field towards the two villages away from the friendly forces. The JTAC quickly confirmed he had maintained visual contact with the insurgent and that we had the proper target. We then began coordinating for an attack. Given the time it takes to reposition the aircraft for an attack run, it became apparent that the insurgent would be between the two villages by time we were able to employ. So we rapidly conducted a collateral damage estimate and calculated the risk estimate distance. In doing so we determined a GBU-54, a Joint Direct Attack Munition, [a type of PGM] with a 5-millisecond delay on the fuse would not only satisfy the target, but would also adhere to the ROE. Mitigating the risk of civilian casualties was the most important factor in making that determination. The JTAC and ground commander approved our weapon recommendation and cleared us "hot"…the weapon worked as advertised. The insurgent died, and there was only a divot in the field between the villages. Not one of the nearby houses was harmed. The entire engagement took less than five minutes.[52]

As demonstrated in this example, aviators use CEP to determine the general accuracy of a weapon and *not* as the determining factor in assessing potential collateral damage. The bottom line is that even with the advanced technology of the 21st century, it is not possible to mitigate all risk of collateral damage during weapons employment. There is always some potential for unforeseen circumstances such as weapons

malfunction or employment error. This is to say nothing of the highly stressful, unpredictable, friction-filled environment in which warfare takes place. Where then does that leave us in the struggle to avoid aviation-related civilian casualties?

An Insatiable Demand for Precision

The Department of Defense acknowledged in the Air Land Sea Application Center's *Multi-Service Procedures for the Joint Application of Firepower*, that "Technology has encouraged high expectations among both the military and the public of victories at minimal human cost."[53] It can be argued that the development of these expectations can be traced back to the early rhetoric of aviation, the rapid development of airpower, and the repeated overstatement of airpower capabilities by airpower advocates through the years. From the Norden bombsight and its ability to "drop a bomb into a pickle barrel" to what Scott Murray called the "ideal of precision that always hit the guilty and never the innocent," the public has come to equate precision with perfection.[54] This expectation is not limited to the general public; it has also affected the way in which military leaders, and Airmen in particular, view the employment of precision bombing.

After World War II, America's perspective on precision bombing came down to the question, "How might airpower serve American objectives while strictly limiting American sacrifices, and not entail horrific destruction of human life?"[55] The ability to find and attack specific targets by air was a highly desired application of military power. United States decision-makers sought to gain coercive leverage in both Korea and Vietnam though the ability to attack a wide array of targets whose destruction would inflict costs on the enemy, thus providing the United States with strategic bargaining leverage. During the course of the Korean War, this shift in mindset was documented in

the operational decisions made by the Far East Air Force commanders after the reversal at the Yalu River and the retreat of United Nations forces. Major General Douglas MacArthur gave subordinate commanders the authorization to employ incendiary weapons to attack civilian morale by declaring all villages as communist targets, but his commanders elected restraint.[56] According to historian Conrad Crane, the subordinate commanders' decision added emphasis to the increasing demand for accuracy in bombing operations in urban areas.[57] Like the Korean War, the Vietnam conflict increased the demand for accuracy and precision in airpower employment. In the early 1970s, the American public became increasingly insistent that military leadership "limit collateral damage and noncombatant casualties."[58] The advent of laser-guided bombs gave both the military and the public the precision they were seeking, and Operation Linebacker I proved airpower's ability to meet the increased demands for accuracy. From April to May 1972, more than 70-percent of the enemy tanks destroyed or damaged were the result of these "new 'aerial-precision' attacks."[59]

In 1991, Operation Desert Storm "showed how radically precision attack had transformed the traditional notion" of war.[60] Civilian audiences had front row seats to this transformation, as opening night footage of cruise missiles and anti-aircraft artillery fire streaming across television screens. The monochromatic weapon system video came to epitomize accuracy and precision, further persuading the public that modern warfare could be leveraged with 'silver bullets' that would never miss and only kill the bad guys. This demonstration of superior technology fueled the idea that wars could be prosecuted without casualties. The television footage aired during the 90-day Air War over Serbia helped cement the image of aviation excellence and precision in the minds

of viewers worldwide, with bomb after bomb impacting precisely where the weapon system was designated. A perception that held, despite the fact that erroneous targeting led to the destruction of the Chinese embassy.

Precision = Perfection: Zero Margin of Error

Weapon system footage and the ongoing rhetoric of airpower advocates has anchored expectations for airpower to deliver in their quest for precision. And therefore, the Air Force has reaped what it has sown in the resulting public expectation for perfection. The employment of such precision "technologically, culturally, and morally represented a new American way of war."[61] While the public *expects* perfection, the world of aviation creates an insatiable *demand* for it, as even a minor mistake can lead to loss of life. This never-ending quest for flawlessness is bred into aviators from the first day of pilot training; it is reinforced after every combat mission, and it is even emphasized after an aviator's "fini-flight" (last flight), by way of the debrief. In debrief, no mistake is too small to identify and correct, no error is accepted without understanding its cause and determining how to fix it or avoid it in the future. Aviators learn to live comfortably with the goal of perfection, while knowing it will never be attained. Perhaps this is why aviators use terms like "precision" and "surgical" so freely; to them it is a desired end state, not necessarily a current reality. This culture of zero margin for error may also be the reason that the military has been unable to manage public expectations with regard to airpower employment and the potential for civilian casualties.

This seemingly insatiable demand for flawless application of airpower has accelerated alongside the increased accuracy of precision-guided munitions and technologically advanced weapons platforms. In briefings to Airmen in Afghanistan,

Lieutenant General Walter Buchanan, then Commander of United States Central Air Forces, expressed how the merger of accuracy and the expectation for perfection has necessarily changed the way Airmen think about airpower employment by stating starkly, “every bomb has the potential for strategic impact.”[62] This strategic impact stems from the United States projection of power, and in particular, airpower. John Tirman, Executive Director at MIT's Center for International Studies, opined in the *Washington Post*, “the United States should be regarded as a principal advocate of human rights,” and a nation’s credibility is undermined when airpower inflicts harm on civilians regardless of the circumstances.[63] If one accepts this argument, then it can be deduced that this is why aviation-caused civilian casualties have such a significant effect. Balancing public perception with the fact that Coalition Forces are fighting a counterinsurgency, it becomes clear why such emphasis is placed on mitigating aviation-caused civilian casualties. As General Stanley McChrystal observed, “at the end of the day, a counterinsurgency is decided by people’s perceptions and how people feel.”[64] He added: “if you take action that has the risk of harming civilians, you have to carefully consider that decision, because you can’t bring a civilian who has been killed back to life.”[65] As depicted in the opening vignette, each targeting decision must be weighed and the tradeoffs evaluated prior to strike execution. Will the prosecution of the target provide sufficient gain to outweigh the potential negative effects of collateral damage should it occur?

Civilian Casualties and Afghanistan

In July 2009, General McChrystal published a somewhat controversial Tactical Directive, a form of commander’s guidance. This document highlighted to the International Security Assistance Forces that “we will not win based on the number of

Taliban we kill, but instead on our ability to separate insurgents from the center of gravity – the people."[66] General McChrystal further stated that tactical victories may amount to strategic defeats if they are gained by causing civilian casualties or excessive damage. He stressed that "carefully controlled and disciplined employment of force" is called for, and he encouraged commanders to weigh the gain of using close air support against the cost of civilian casualties.[67]

General David Petraeus, McChrystal's successor, revised the Tactical Directive in August 2010 and reinforced the *disciplined use of force*.[68] Across the Coalition, the phrase *courageous restraint* was applied to the Tactical Directive, implying that the ground force commanders must change the mindset in which they employed lethal force. The overriding consideration was a realization that "every Afghan civilian death diminishes our cause."[69] Each commander was confronted with the challenge of balancing the pursuit of the enemy with the need to minimize loss of innocent life while protecting the men and women under his/her command. This delicate balance demanded a greater reliance on every Coalition Soldier, Sailor, Marine, and Airman, to not only understand the intent of the Tactical Directive, but also to comprehend the many nuances of the legal framework known as the "Rules of Engagement" (or ROE).

General John Allen, Petraeus's successor, continued this trend in his Tactical Directive, issued to International Security Assistance Forces (ISAF) in November 2011. His carefully crafted guidance spoke of four basic tenets which must influence every warfighter's decision to employ lethal force: great discipline, tactical patience, judicious application of force, and the inherent right to self-defense which must be applied in concert with the first three principles. [70] The commander's intent is to achieve perfection

with regard to eliminating “ISAF-caused civilian casualties across Afghanistan”…again, no margin for error.[71]

During the ISAF Aviation Civilian Casualty Conference held in Kabul in January 2012, Coalition leaders from across Afghanistan echoed the sentiment of a changing warfighter mindset.[72] Air Commodore Michael Wigston, Director of Air Operations International Security Assistance Forces Joint Command, argued that the role of leadership in civilian casualty mitigation is that of influencing the warfighter’s mindset.[73] Brigadier General Thomas Deale, 455th Air Expeditionary Wing Commander, summarized the shift in the aviator mindset in Afghanistan when he stated that the need to change was at the most basic level of how the Coalition is tactically employing airpower assets: “we train to get bombs off the aircraft, we don’t train not to drop.”[74]

The challenge facing today’s combat aviators is how to balance the avoidance of civilian casualties against the inherent right of self defense. “Self defense” is applied in broad terms as Airmen not only defend themselves, but also hold the responsibility to defend all friendly forces. In each case, the decision to act must be weighed with the potential long-term impact of civilian casualties. The Coalition has developed a complex series of Rules of Engagement, which are based in the rule of law, as well as the formal laws of armed conflict as codified in international documents and upheld in customary international law, which Airmen use during the targeting process. According to the senior legal counsel to the Combined Air Operations Center, these rules, while much debated, have “proven to be sufficient” in striking the balance between freedom of movement and civilian casualty avoidance.[75] In his closing remarks to the conference, General Deale conveyed what is occurring on the battlefield today, “We must keep

everything in context…our forces and the air/ground teams are doing it right."[76] Major General Tod Wolters, Commander, 9th Air and Space Expeditionary Task Force-Afghanistan, equated the mindset shift to "PhD-level activity," and that activity is an ongoing evolution at all levels.[77] With such intensity being applied to mitigation, why does each occurrence of aviation-related civilian casualties still possess the ability to have a significant strategic impact?

Managing Expectations

In an August 2011 study of Afghan war casualties, Shanthie Mariet D'Souza proclaimed that "Violence against civilians has reached a record high in Afghanistan," but qualified her statement by explaining that the violence was due to insurgent activities, not coalition forces.[78] ISAF's 2011 civilian casualty assessment for the same month reported insurgents caused over 80-percent of the total civilian casualties; and over 70-percent of all civilian casualties were a result of improvised explosive devices planted by insurgents.[79] These numbers have not changed significantly over the past year. Despite the facts, the global media's so-called "CNN effect" continues to place increased emphasis on aviation-related civilian casualties, thus skewing public perceptions of the issue of overall civilian casualties.[80] On 6 December 2011, two insurgent bombs exploded near simultaneously at a public gathering near the Abu Fazal shrine in Kabul and near the main mosque in Mazar-i-Sharif, killing 58 Afghan civilians and injuring another 167.[81] The news coverage lasted for several days. In comparison, an incident initially reported as aviation-caused civilian casualties on the Afghan-Pakistan border causing the death of 42 Pakistani military members (later ruled a friendly-fire incident), resulted in a major international incident, a comprehensive re-training of all Coalition Forces, and media coverage lasting well into the new year.

The reason for this CNN effect may reside in society's changing expectations of war. In an *Armed Forces & Society* essay, Hugh Smith argued, "Western style of war now prefers campaigns of precise and limited destruction."[82] It can be argued that western society has long preferred such precise campaigns and what has changed is the level of *expectation* for such precision. Perhaps this preference developed into a widely-held expectation because the United States has failed to take a proactive approach in managing these expectations when it comes to the application of airpower. In fact, the rhetoric and weapons system footage used by advocates to extol the virtues of airpower has helped to solidify these expectations. In *Information Operations Matters*, Leigh Armistead observed, "information campaigns are almost always conducted at a tactical level."[83] In the case of aviation-related civilian casualties, not only is information provided from the tactical perspective, but it is reactionary, rather than proactive. Public Affairs officers in Afghanistan confirmed the presence of a reactive communication plan with regard to civilian casualties, but "did not know of any pre-planned, or proactive plans."[84]

Why is there a tension between the effort of eliminating the occurrence of aviation-related civilian casualties, and the effort to develop and apply a strategic communications plan to mitigate the impact civilian casualties have when they do occur? The simple answer, and perhaps one derived from the historical approach that airpower advocates have taken, is that no one really wants to admit that civilian casualties are possible. As one State Department employee put it, "taking a proactive approach would be admitting that civilian casualties could actually occur."[85] However, a complex, but more substantial, explanation is that airpower advocates are caught in a

dilemma between a strong desire to demonstrate the effectiveness of airpower, and the need to manage expectations. If the past is any indicator of the future, even if advocates tone down the rhetoric of "precision," people have been conditioned to hear only what they want to hear…that which supports their "ideas of exceptionalism."[86] The Department of Defense and defense contractors are the logical origin of this "precision" thought process; after all, Congress cannot be expected to authorize funding for research and development for "slightly-more-precise" weaponry. This 'marketing campaign' approach to aerial weaponry successfully feeds on the public desire to uphold this "sense of American exceptionalism" where warfare intersects human rights.[87]

Unlike during World War II, only a very small percentage of the population serves, or has served, in the Armed Forces. This fact helps preserve highly unrealistic expectations. A growing number of people envision warfare in the terms of a video game. No matter the level of 'realism' ascribed to these games, they cannot provide the player with a real sense of the inherent chaos of war and the effort required to simply comprehend what is actually happening at any given moment on the battlefield. Because of this dichotomy, the United States has not been able to achieve an acceptable balance between the need for proactive strategic communications and legislative/public support for agencies who conduct those activities.

How Strategic Communications Can Help

On April 13, 1917, Woodrow Wilson established the Committee on Public Information in order to influence America's public opinion on the World War.[88] The organization used films, newspapers, radio, telegraph, and posters to encourage public support for the American war effort. This comprehensive approach ensured that all

Americans, whether they resided in a large city or on a mid-western farm, would be touched by the messages released by the committee.[89] From victory gardens to war bond drives, every American was encouraged to support the war effort and participate in it. The committee's zeal got out of hand when the agency went beyond presenting the truth in the most favorable light, and began fabricating information, such as suggesting that combat aircraft from the United States were heading to Europe when the factory had not even begun production.[90] Such events caused a decline in public support, and led to public and legislative mistrust of the organization. The agency became known as the 'Committee of Public *Misinformation*' and laid the groundwork for public skepticism of the legitimacy of strategic communications. It was with great public and legislative support that Wilson abolished the committee on August 21, 1919.

In June 1942, Franklin D. Roosevelt pursued a more global approach to strategic communications, and established the Office of War Information in order to ensure "the American people and all other peoples opposing the Axis of aggressors" were "truthfully informed about the common war effort."[91] The office was tasked to establish an interagency committee responsible for the creation of policy, plans, and programs to disseminate information on the war effort in order to "facilitate the development of an informed and intelligent understanding, at home and abroad."[92] The office utilized all available media forums to broadcast the American war effort, producing such memorable films as the "Flag Raising on Mount Suribachi" on the island of Iwo Jima and "Mission Accomplished: The Story of the Flying Fortress," to support national interests and to educate the public on the war effort.[93]

The agency also leveraged public entities to facilitate communications; one well known example was Walt Disney's "Victory through Airpower." This synchronized approach to the development and execution of strategic communications played a "dramatic role" in the outcome of World War II.[94] But even the success of this effort failed to leave a lasting legacy that would give a strategic communications entity a permanent seat at the table. John Whitton lamented this failure when he commented on the decision to disband the Office in 1945, "President Truman, by decree, almost completely demolished the formidable information apparatus so laboriously assembled during the war."[95]

The responsibilities for disseminating information fell to the State Department's Office of International Information and Cultural Affairs, but due to the growing demand to counter the Communist propaganda machine and internal turf battles, it would not reside there long. The United States Information and Educational Exchange Act of 1948 established the first independent peacetime organization for strategic communications, the United States Information Agency, which stood up formally in 1952. The agency's mission was "to understand, inform and influence foreign publics in promotion of the national interest, and to broaden the dialogue between Americans and U.S. institutions, and their counterparts abroad."[96] In 1997, the Information Agency had over 6,000 employees who developed and executed a comprehensive, interagency approach to strategic communications which espoused the position of the United States.[97]

At the end of the Cold War in 1999, the United States Information Agency was disbanded in order to cut costs and bring public diplomacy closer to policy decisions.[98]

The mission sets were shifted back to the Department of State, this time under the auspices of the Undersecretary for Public Diplomacy and Public Affairs. This merger was intended to bring "public diplomacy into play sooner" in order to develop more "persuasive" messages "to foreign audiences".[99] A year after the transition however, the United States Advisory Commission on Public Diplomacy determined that "the consolidation of the United States Information Agency into the State Department…produced a mixed record."[100] Some believe that merger has not increased, or even sustained, the United States' ability to convey their strategic message. Specifically, the 2000 assessment found that "the systematic collaboration that USIA had with other Departments, for example the Pentagon, has not continued."[101] Nine years later, Ambassador William Rugh stated the "merger has hampered public diplomacy" by creating generalists.[102] This generalization created two significant drawbacks to successful strategic communications. First, individuals are not able to practice and hone the skill sets necessary to effectively and efficiently plan and execute strategic communications.[103] Second, technological advancements in the communication industry require a dedicated profession to successfully navigate and exploit the myriad of communication channels available.

It can be argued the United States strategic communications skill sets have atrophied and currently lacks an effective unified/interagency approach. The 2005 Schneider Report highlighted the need to transform U.S. strategic communications, stating that this transformation requires "collaboration between government and the private sector on an unprecedented scale."[104] Secretary Robert Gates highlighted the atrophy in the 2008 National Defense Strategy stating, "Although the United States

invented modern public relations, we are unable to communicate to the world effectively who we are and what we stand for as a society and culture."[105] By 2009, the United States still had not been able to achieve a collaborative balance; the Strategic Communications Science and Technology Plan, published by the Department of Defense stated that "While organizational strides have been made to better communicate and coordinate efforts among the interagency community, the projects are largely disconnected and not aligned across the continuum of [strategic communications] domains."[106] The 2010 National Framework for Strategic Communication continued to stress the necessity to "align our actions with our words," and develop a synchronized approach to our strategic communications.[107] Without re-investing in the "arsenal of persuasion," the United States and the Department of Defense will be trapped in the endless battle to mitigate the strategic impact of aviation-related civilian casualties rather than addressing the root cause of improperly managed expectations.[108]

Changing Mindsets

Curing the root cause of America's shortfall in the realm of strategic communications goes well beyond the scope of this paper; however, one symptom of this shortfall could be remedied by a shift in mindset about how we approach strategic communications as they relate to aviation-related civilian casualties.

Both State Department officials and Department of Defense public affairs officers are well prepared in the event civilian casualties take place, but they lack a proactive approach. The current mindset can be compared to an ostrich's head in the sand: if it is not openly admitted, perhaps the danger will go away. It is this denial which gives 'teeth' to the strategic impact of civilian casualties. In order to mitigate the impact, four

shifts in mindset must take place in: 1) the execution of airpower, 2) the perspective of scholars, 3) terminology used by airpower advocates, and 4) the United States' approach to strategic communication.

The shift in the military mindset in applying airpower while mitigating civilian casualties is well underway. Airmen are systematically utilizing complex collateral damage estimates for every target prior to employing airpower, with mitigating civilian casualties in the forefront of the decision making process. This shift must be sustained and fueled through systematic and timely communications. Senior leader communications, such as the tactical directives mentioned above, guide the manner in which Airmen approach the application of airpower. As demonstrated in the opening vignette, these communications reinforce the necessity of understanding the impact of airpower employment beyond the target set, and they speak to the circumstances when it is appropriate to "let him [the enemy] go." The intent is not to advocate for a policy of constraint, but rather a broader approach to the problem set of airpower application which leads to the understanding that it is no longer sufficient to simply find, fix, and finish a target. Instead, aircrew, JTACs, and ground commanders must consider the entire area in which the target is located and the long-term impact that any potential collateral damage may have on the strategic environment.

A similar change in perspective must take place with those who study the subject in general, and the 'causes' of civilian casualties specifically. Scholars must open the aperture and take into account the actions of Airmen to mitigate the occurrence of civilian casualties; and examine new avenues for avoiding such situations, rather than placing blame or passing judgment. Airmen have a critical role to play in facilitating this

understanding, they must share and explain the chaotic environment of the battlefield in such a way scholars are able to contextualize the problem of civilian casualty mitigation. By understanding the manner in which the military applies airpower and civilian casualty calculations, scholars can gain a broader perspective on the problem set – a perspective that may unlock new solutions to mitigating civilian casualties in the future.

Words matter. Airpower advocates must consciously evaluate the words they use to articulate the capabilities and innovations of airpower. The days of "pickle barrel bombing," "surgical strikes," and "precision bombing" must be firmly left in the past. Airpower advocates should leave the marketing campaign to the advertising agencies and defense contractors…the airpower professional should be seen as just that, *professional*. These professionals should choose their words carefully to ensure they bound the left and right limits of the capability -- the worst case as well as the best case. No service has been faulted for over-delivering capabilities. There is a delicate balance that must be achieved between espousing the need and purpose for innovative technology, and managing expectations when it comes to execution. Striving for perfection should always be part of the airpower profession; claiming achievement of such perfection is folly.

Finally, and perhaps the most challenging change in mindset, is to develop a proactive strategic communications campaign which is executed prior to applying airpower. Such a campaign should target public expectations, both foreign and domestic. It should realistically address the extent that civilian casualties can be avoided in an environment of high uncertainty and dynamism; an environment that cannot be made devoid of ambiguity and unpredictability. Such strategic

communications could mitigate the negative impact that civilian casualty incidents have on what would be considered otherwise successful military operations, and thus improve the overall effectiveness of United States' policy application.

Advocating for a change in the mindset in airpower execution, the perspective of scholars, the terminology used by airpower advocates, and the United States' and Department of Defense's approach to strategic communication, are in no way intended to advocate blanket acceptance of civilian casualties during combat operations as a way of life. Instead, the intent is to frame aviation-related civilian casualties within the realities of 21st century warfare and technology. In doing so, a balance can be achieved between the aviator's insatiable desire for excellence and the American public's demand for "moral exceptionalism."[109]

Endnotes

[1] Summary of personal communication between author and undisclosed Joint Terminal Attack Controller which took place in Afghanistan on November 13, 2011.

[2] Peter Adey, Mark Whitehead, and Alison J Williams, "Introduction: Air-target: Distance, Reach and the Politics of Verticality," *Theory Culture Society* 28, (2011): 173-187.

[3] Patricia Owens, "Accidents Don't Just Happen: The Liberal Politics of High-technology Humanitarian War," *Millennium – Journal of International Studies* 32, (2003): 595.-616

[4] Maja Zehfuss, "Targeting: Precision and the Production of Ethics," *European Journal of International Relations* 17, no. 3, (2010): 543-566.

[5] Michael N. Schmitt, "Precision Attack and International Humanitarian Law. *International Review of the Red Cross* 87, (2005): 445-466.

[6] Aldo A. Benini and Lawrence H. Moulton, "Civilian Victims in an Asymmetrical Conflict: Operation Enduring Freedom, Afghanistan," *Journal of Peace Research* 41, (2004): 403-422.

[7] Wilbur Wright, "Quotes," *The Wright Brothers,* http://wrightbrothers.info/quotes (accessed October 23, 2012).

[8] John Gillespie Magee Jr., "High Flight," [August or September 1941,] *The Official Website of National Museum of USAF*,

http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=1349, (accessed October 14, 2012).

[9] Amelia Earhart, "Quotes," *The Official Website of Amelia Earhart*, http://www.ameliaearhart.com/about/quotes.html, (accessed October 23, 2012).

[10] Giulio Douhet, *Command of the Air*, trans. Dino Ferrari (Air Force History and Museum Program: Washington DC, 1998), 6.

[11] Ibid., 9.

[12] Ibid., 28.

[13] Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (Transaction Publishers: New Brunswick, 2003), 53.

[14] William Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military,* ed. David Jablonsky (Stackpole Books: Mechanicsburg, 1999), 421.

[15] Roger G. Miller, *Billy Mitchell: Stormy Petrel of the Air* (Washington DC: Office of Air Force History, 2004): 24.

[16] Mitchell, *Winged Defense,* 422-423.

[17] Ibid., 433.

[18] Miller, *Billy Mitchell: Stormy Petrel of the Air*, 14-19.

[19] Ibid., 21.

[20] Ibid., 32.

[21] Ibid., 33.

[22] Ibid., 33.

[23] Tami Davis Biddle, "An American Way of War: The Quest for High-Altitude Daylight Strategic Bombing," *Winged Crusade: The Quest for American Air and Space Power,* ed. Michael Terry (Chicago: Imprint Publications, 2006), 57.

[24] Mitchell, *Winged Defense,* 26.

[25] J.F.C. Fuller, *The Foundations of the Science of War* (London: Hutchinson, 1925), 314.

[26] Winston Churchill, *Churchill by Himself: Definitive Collection of Quotations,* ed. Richard M. Langworth, (UK: Ebury Press, 2008), 209.

[27] Ibid., 167.

[28] "World War", *Time*, October 23, 1939, 12.

[29] Tami Davis Biddle, *Rhetoric and Reality in Air Warfare* (Princeton, NJ: Princeton University Press, 2002), 165.

[30] James E. Fechett, *Flying. A Volume in the Century of Progress Series* (Baltimore, MD: Williams & Williams Co, 1933), 135.

[31] Richard P. Hallion, "Precision Guided Munitions and the New Era of Warfare," *Air Power Studies Center,* APSC Paper Number 53 (1995).

[32] Ibid.

[33] United States Air Force (USAF), "Strategic bombing: New flexibility," 2011, *United States Air Force,* http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=1933 (accessed December 9, 2012).

[34] Hallion, "Precision Guided Munitions."

[35] Conrad C. Crane, "The Air Campaign Over Korea: Pursuing the Enemy," *Joint Force Quarterly*, (Spring/Summer 2001): 79.

[36] Paul G. Gillespie, *Weapons of Choice: The Development of Precision Munitions,* (Tuscaloosa: The University of Alabama Press, 2006): 76.

[37] Ibid., 119.

[38] Colonel Gary L. Crowder, "Effects-based operations," (2003). Accessed from http://www.defense.gov/Transcripts/Transcripts.aspx?TranscriptID=2067.

[39] Hallion, "Precision Guided Munitions."

[40] Gillespie, *Weapons of Choice*, 124.

[41] Hallion, "Precision Guided Munitions."

[42] Thomas A. Keaney and Eliot A. Cohen, *Air Power Survey: Summary Report,* (Washington, DC: Department of the Air Force, 1993), 225.

[43] Robert L. Pfaltzgraff & Richard H. Shultz, *The Future of Air Power in the Aftermath of the Gulf War,* (1992):79. ISBN 1-58566-046-9.

[44] Keaney and Cohen, *Air Power Survey*, 243.

[45] Gillespie, *Weapons of Choice*, 124.

[46] United States Department of Defense (DoD), *Joint Publication 1-02: Dictionary of Military and Associated Terms,* (Washington, DC: Pentagon, 2010): 269.

[47] Ibid., 269.

[48] Ibid., 55.

[49] Hugh Smith, "What Costs Will Democracies Bear? A Review of Popular Theories of Casualty Aversion," *Armed Forces & Society,* 31(2005): 487.

[50] Ibid., 55.

[51] United States Department of Defense, *Joint Publication 3-09.3: Joint Tactics, Techniques, and Procedures for Close Air Support (CAS),* (Washington, DC: Pentagon, 2005): V-14.

[52] Interview with confidential source, March 6, 2013.

[53] United States Department of Defense, *Multi-Service Procedures for the Joint Application of Firepower,* (Washington, DC: Air Land Sea Application Center, November 30, 2012): 492.

[54] Scott F. Murray, *The Moral and Ethical Implications of Precision-guided Munitions.* (Maxwell AFB, AL: Air University Press, 2007): 13, http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA488535 (accessed December 5, 2011).

[55] Ibid., 15.

[56] Thomas C. Hone, "Strategic Bombing Constrained: Korea and Vietnam," in *Case Studies in Strategic Bombardment,* ed. R. Cargill Hall, (Washington, D.C.: US Government Printing Office, 1998), 490.

[57] Conrad C. Crane, *Bombs, Cities, and Civilians: American Airpower Strategy in World War II* (Lawrence: University of Kansas Press, 1993), 150.

[58] Murray, *The Moral and Ethical Implications of Precision-guided Munitions*, 18.

[59] Ibid., 19.

[60] Hallion, "Precision Guided Munitions."

[61] Murray, *The Moral and Ethical Implications of Precision-guided Munitions*, 24.

[62] Lieutenant General Walter E. Buchanan, "Combined Forces Air Component Commander Warfighter Talks," briefing, (Bagram Air Base, Afghanistan, 2005).

[63] John Tirman, "Do We Care When Civilians Die in War?" *Washington Post,* January, 8 2012, http://thewashingtonpost.newspaperdirect.com/epaper/viewer.aspx (accessed January 18, 2012).

[64] Susanne Koelbl, "SPIEGEL interview with General Stanley McChrystal: Killing the enemy is not the best route to success," *SPIEGEL Online,* January 11, 2010, http://coincentral.wordpress.com/2010/01/11/gen-mcchrystal-interview-with-spiegel-magazine/ (accessed January 18, 2012).

[65] Ibid.

[66] Headquarters, International Security Assistance Force (HQ ISAF), "Tactical Directive," July 6, 2009, http://www.nato.int/isaf/docu/official_texts/Tactical_Directive_090706.pdf (accessed December 21, 2011).

[67] Ibid.

[68] Headquarters, International Security Assistance Force (HQ ISAF), "General Petraeus issues updated tactical directive: Emphasizes 'Disciplined use of force'", August 4, 2010, http://www.isaf.nato.int/article/isaf-releases/general-petraeus-issues-updated-tactical-directive-emphasizes-disciplined-use-of-force.html (accessed December 21, 2011).

[69] Ibid.

[70] Headquarters, International Security Assistance Force/United States Forces-Afghanistan (HQ ISAF/USFOR-A), "COMISAF's Tactical Directive," November 30, 2011, http://www.isaf.nato.int/images/docs/20111105%20nuc%20tactical%20directive%20revision%204%20(releaseable%20version)%20r.pdf (accessed December 21, 2011).

[71] Ibid.

[72] David Olsen, "ISAF conducts aviation civilian casualty conference," *ISAF Public Affairs*, January 23, 2012, http://www.isaf.nato.int/article/news/isaf-conducts-aviation-civilian-casualty-conference.html (accessed January 25, 2012).

[73] Air Commodore Michael Wigston, "Commander, International Security Assistance Force's Aviation Civilian Casualty Conference: Joint Incident Assessment Team's Lessons Learned," briefing, (Kabul, Afghanistan, Headquarters ISAF, January 17-18, 2012).

[74] Thomas H. Deale, "Commander, International Security Assistance Force's Aviation Civilian Casualty Conference: 451 Air Expeditionary Wing Lessons Learned," briefing, (Kabul, Afghanistan, Headquarters ISAF, January 17-18, 2012).

[75] Colonel Adam Oler, "International Security Assistance Force's Aviation Civilian Casualty Conference: Governing ROE," briefing, (Kabul, Afghanistan, Headquarters ISAF, January 17-18, 2012).

[76] Deale, "451 Air Expeditionary Wing Lessons Learned."

[77] Tod D. Wolters, "Commander, International Security Assistance Force's Aviation Civilian Casualty Conference: Precision Lethality," briefing, (Kabul, Afghanistan, Headquarters ISAF, January 17-18, 2012).

[78] Shanthie Mariet D'Souza, "The Emerging Faultlines of the US-Afghan Strategic Partnership," *Institute of South Asian Studies,* ISAS Brief No. 210, August 10, 2011: 2.

[79] International Security Assistance Assessment Group (ISAF Assessments), *ISAF Monthly Data Trends up to August 2011*, September 30, 2011, http://www.isaf.nato.int/images/media/PDFs/11-09-30%20data%20release_finalv2.pdf (accessed January 17, 2012).

[80] Jack Sine, “Defining the ‘Precision Weapon’ in Effects-based Terms,” *Air & Space Power Journal,* (Spring 2006): 2.

[81] British Broadcasting Company (BBC), “Afghanistan bombs kill 58 in Kabul and Mazar-i-Sharif,” *British Broadcasting Company Online,* December 6, 2011*,* http://www.bbc.co.uk/news/world-asia-16046079 (accessed December 21, 2011).

[82] Smith, “What Costs Will Democracies Bear?” 506.

[83] Leigh Armistead, *Information Operations Matters* (Potomac Books: Dulles, 2010): 1.

[84] Olsen, “ISAF Public Affairs,” 2012.

[85] Grace Stettenbauer, interviewed by author, Carlisle Barracks, PA, December 4, 2012.

[86] Biddle, *Winged Crusade*, 55.

[87] Ibid.

[88] Woodrow Wilson, "Executive Order 2594 - Creating Committee on Public Information," April 13, 1917, Gerhard Peters and John T. Woolley, *The American Presidency Project*, http://www.presidency.ucsb.edu/ws/?pid=75409 (accessed October 14, 2012).

[89] Michael S. Sweeney, *Secrets of Victory: The Office of Censorship and the American Press and Radio in World War II* (Chapel Hill: University of North Carolina Press, 2001). ISBN 0-8078-2598-0.

[90] Thomas Fleming, *The Illusion of Victory: America in World War I* (New York: Basic Books, 2003), 119.

[91] Franklin D. Roosevelt, "Executive Order 9182 Establishing the Office of War Information," June 13, 1942, Gerhard Peters and John T. Woolley, *The American Presidency Project*, http://www.presidency.ucsb.edu/ws/?pid=16273 (accessed October 14, 2012).

[92] Ibid.

[93] Office of War Information, http://archive.org/details/CEP413 (accessed October 15, 2012).

[94] Josette H. Williams, “The Information War in the Pacific, 1945: Paths to Peace,” *Central Intelligence Agency*, https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol46no3/article07.html (accessed October 12, 2012).

[95] John Boardman Whitton, ed., *Propaganda and the Cold War* (Public Affairs Press: Washington, 1963), 5.

[96] United States Information Agency’s Office of Public Liaison, “Overview,” *USIA*, http://dosfan.lib.uic.edu/usia/usiahome/oldoview.htm#overview, (accessed October 30, 2012).

[97] United States Information Agency, “Fact Sheet”, *USIA*, http://dosfan.lib.uic.edu/usia/usiahome/factshe.htm (accessed November 22, 2012).

[98] William A. Rugh, “Enabling Public Diplomacy Field Officers to do Their Jobs,” *American Diplomacy*, September 2009, http://www.unc.edu/depts/diplomat/item/2009/0709/oped/rugh_enabling.html (accessed 25 November 2012).

[99] United States Advisory Commission on Public Diplomacy, “Consolidation of USIA Into The State Department: An Assessment After One Year,” (Washington, DC: United States Department of State, 2000): 5.

[100] Ibid., 1.

[101] Ibid., 6.

[102] Rugh, “Enabling Public Diplomacy,” 2009.

[103] Ibid.

[104] William Schneider, Jr., *The Schneider Report: A National Model of Strategic Communication*, (Cosimo, 2005): 1-2. ISBN: 1-59605-145-0.

[105] Department of Defense, *National Defense Strategy*, (US Department of Defense: Washington DC: US Department of Defense, 2008): 17.

[106] Strategic Communications Science and Technology Plan: Current Activities, Capability Gaps and Areas for Further Investment, April 2009 (Department of Defense): 9.

[107] Barack Obama, “National Framework for Strategic Communications, 2010,” (Washington, DC: The White House, 2010): 3.

[108] Strategic Communications Science and Technology Plan: Current Activities, Capability Gaps and Areas for Further Investment, April 2009 (Department of Defense).

[109] Biddle, *Winged Crusade*, 55.