

The Digital Face of Airpower:
Asymmetry, Artificial Intelligence and Intimate Combat in
the Twenty-First Century United States Air Force

A Thesis Presented for the
Master of Arts
Degree
The University of Tennessee, Knoxville

Jordan Bolster
December 2023

Abstract

Remotely piloted aircraft (RPA) operators have been at war for over twenty-years using unmanned aerial vehicles to kill combat enemies half-a-world away. Their emotional experiences provide an opportunity to examine intimacy in warfare which can be compared and contrasted with conventional pilots and traditional rifle-bearing ground troops. By comparing and contrasting specific emotions felt across various combat environments and technologies, it is possible to answer the question of whether or not RPA operators are legitimate warriors or legitimated assassins. The implementation of RPA operators in combat zones and the proliferation of unmanned technology on the battlefield open up new questions concerning the inevitable development, integration, and deployment of artificial intelligence (AI) across the battlespace. Societal fears reveal cultural values, and many of the same fears expressed over the introduction and implementation of RPAs are again being used against AI. This new military history examines war to try and discover answers to questions concerning RPA operators and the coming revolution in military affairs brought about by AI.

This thesis will provide a nuanced understanding of intimacy in warfare by complicating the factor of distance. Specifically, it challenges the conventional wisdom concerning the inverse relationship between intimacy and distance. RPA operators, especially in the US Air Force, are the furthest removed from the battlefield and are somehow experiencing increased emotional entanglement instead of detachment. There have been too few comprehensive studies of modern US Air Force combat experiences and the emotional impact felt by airmen. Pilots were studied in the Second World War and even into Vietnam, but since that time there has been little interest in understanding emotion, intimacy and war from the perspective of airmen. This is a mistake. Airmen, even in an asymmetric war zone, experience a wide range of emotions which offer clues to understanding war and society in a unique way. The intimate experiences of aviators also promise to provide insights into understanding the emergence of artificial intelligence and its proper implementation in warfare.

Table of Contents

Introduction.....	1
Historiography	5
Theme 1: Intimacy and Emotion in War.....	7
Theme 2: RPAs and Ethical Considerations	9
Chapter 1 The Rise of AI-Driven Airpower	12
1.1 Air Force History and Air Dominance in the Last Fifty Years.....	12
1.2 Rise of the Machines: Remotely Piloted Aircraft in Combat	15
1.3 Asymmetric Airpower: Conventional Pilots, Danger, and Destruction at Distance.....	17
Chapter 2 Airpower and Intimacy in the War on Terror	23
2.1 Face-to-Face: The Psychology of Killing While in Real Danger of Dying.....	23
2.2 How Conventional Aircrews Overcome the Psychological Resistance to Killing.....	32
2.3 Combat Intimacy for Non-Combat Conventional Aircrew	35
2.4 How RPA Crews Overcome the Psychological Resistance to Killing	36
2.5 RPA Crews and Distant Intimacy	42
2.6 Intimacy Among “Shooters, Assisters and Watchers”	44
Chapter 3 Ethics, Culture and Artificial Intelligence.....	50
3.1 The Ethics of Drone Warfare	50
3.2 Artificial Intelligence to the Rescue?.....	53
3.3 The Implications of the Concentration of Intimacy	53
3.4 Cultural Shifts with Technology	55
3.5 Artificial Intelligence Will Change Culture Again.....	62
Chapter 4 Conclusion: War is Killing and Killing is Intimate.....	67
4.1 Killing and Sex: Intimate Associates.....	67
4.2 Trauma and Dark Humor	69
4.3 Could Artificial Intelligence Increase Battlefield Intimacy?	70
4.4 Conclusion	73
Bibliography	75
Primary Sources:.....	75
Secondary Sources:.....	77
Appendix.....	81
Appendix A: Figures.....	81
Vita.....	82

Introduction

“Hey new guy, you want to see something cool? Take a look, two o’clock low, about 45-seconds after we pop off the boom.” Before I could toggle the radio switch to reply to the F-15 flight lead, I heard our boom operator say, “Disconnect.” With that word, our boom operator stopped the flow of gas into the fighter, punched him off the aerial-refueling boom, and watched him disappear beneath us.

The two F-15s our KC-10 had been dragging into country departed the nonstandard formation low for their first attack run of the evening.¹ It was the summer of 2016, and an American led coalition was engaged in heavy fighting against the Islamic State of Iraq and Syria (ISIS) just north of Baghdad. This was my first deployment and as a young 1st Lieutenant I had never seen combat. So, when I actually saw that distant fireball, it was as exhilarating as it was otherwise uneventful. I had just witnessed, first-hand, the culmination of my dreams, ambitions, and years of training to become a pilot in the US Air Force. Our boom operator ran into the cockpit from the rear of our 200-foot-long aircraft to view the blast as well. This was neither Hollywood magic nor the exaggeration of a video game. This was real.

Though it had looked like a small explosion from our altitude, we had actually seen a strike with our naked eyes; a rare event for tanker bubbas. Each of us let out some small exclamation signaling our joy and pleasure to the others. We knew we were flying a vital mission

¹ Aerial refueling tankers, like the KC-10 or KC-135, often led a formation of fighters or bombers into the combat area so the receivers could drop ordinance on enemy combatants. We would then loiter to support the fight until we ran low on time or gas. Then we could meet up with more receivers to give them the requisite gas to make it back to base. When we were dedicated to a formation of receivers, we considered it either a fighter or bomber drag, depending their aircraft type.

and those bombs were falling on terrorists who had vowed to destroy us, our families, and everything we believed in. ISIS was a monolithic monster who tortured pilots, like me, before shoving them in cages and lighting them on fire.² They imposed a brutal, rapacious, and oppressive regime on unwilling subjects. At that point in my life, they were a faceless ‘other’ that needed to be eradicated and that tiny blast was an explosive vindication of our righteous cause. Comparatively, the rest of the mission was a routine set of scheduled refuelings before we returned to our ‘undisclosed location in southwest Asia’ for crew rest.

A couple days after my first glimpse of modern combat, we stepped to our pre-mission crew briefing and were treated to the drone footage of the strike our F-15s had executed. In thermal black and white, we watched a building in an Iraqi village disappear in a bright white moment. Only rubble remained where the building had been. A couple moments went by and I saw men clamber out of the rubble attempting to escape the world which had collapsed on them. In frozen horror, the exhilaration of the culmination of my training hit me in a new way. Seemingly from the side. I was still excited and proud, but simultaneously overcome with grief and shame. For the first time, my actions had directly contributed to the deaths of other human beings. “Oh, we’ve got some squirters,” my aircraft commander shouted jubilantly.³

That comment unnerved me further, as I watched men running for their lives before several were cut down by follow on strikes. No other single event I have witnessed has created

² Cassandra Vinograd, “Burned Alive: ISIS Video Purports to Show Murder of Jordanian Pilot,” *NBC News*, February 3, 2015.

³ Squirters was a colloquial expression used to describe people who survived a strike before scattering in numerous directions. I am unsure if it was merely my aircraft commander who preferred the term or if it was ubiquitous. I do not recall the term being used much after this specific deployment, but it was shortly after that time that combat operations against ISIS slowed considerably.

such a dissonance in my being. I knew they were my enemy and had done many unspeakable evils. Yet, as a Christian, I also believed they were made in the image of God. Though I never pulled the trigger, I felt morally culpable for their deaths.

It turns out that dissonance I experienced is a well-documented phenomenon and a subject of numerous historical and psychological research topics. Though the studies vary widely, they commonly demonstrate that ordinary people experience intense emotional reactions to killing other humans. The emotions experienced by combatants can diverge extensively as their psyche grapples with the terror of death.⁴ Some embrace and enjoy the killing while others are repulsed or break down. Most fall somewhere in-between, feeling exhilaration intertwined with their guilt and shame.

The high-degree of technological advancement exemplified by remotely piloted aircraft (RPA) has provided a new window into exploring the intimacy of combat. From bows to guns to artillery, the mechanization of war increased the physical distance between opposing forces aiding them in overcoming psychological barriers to killing, but not the consequences of their devastation. High-definition cameras and the 24/7 surveillance capacity of the US Air Force allows members in the kill-chain to monitor enemies prior to a strike. That same technology enables the kill-chain an unprecedented opportunity to observe, experience, and document the gruesome aftermath of a kill.⁵ Ironically, the ultimate standoff technology, RPAs connect the battlefield back to the home front.

⁴ Joanna Bourke, *An Intimate History of Killing: Face to Face Killing in 20th Century Warfare*, 29.

⁵ Wayne Phelps, *On Killing Remotely: The Psychology of Killing with Drones*, 48. Surveillance of an enemy can happen for as little as a few hours prior to authorization to strike, but most often occurs for weeks. The value of the

Modern warfare's intertwining of the battle front and the home front offers a new means of exploring the human experience. The rapid digitization of the face of battle has created an unprecedented level of asymmetric intimacy through RPA combat employment. Like so many modernizing advances, RPAs promise a better tomorrow by fundamentally changing the prosecution of war. However, technology does not make killing better; it merely makes killing easier. The trauma of killing another human remains the most destructive act a human can perform in war regardless of the technology used to affect the outcome. Killers not only destroy others, but also themselves through the slaughter. This trauma, and the numerous emotional expressions it manifests, offers military historians the chance to analyze the certain unchanging trends in war and society.

Military history is a broad-sweeping term that often lumps different disciplines together in an umbrella term. While the two are related, applied military history and academic military history, are directed at different audiences with their own agendas. Applied military history has an ancient pedigree derived from "the now long-held conviction that understanding the wars of the past will help military leaders plan for, and succeed in, the future."⁶ It is typically formulaic and attempts to distill meaningful lessons for military professionals. Most of the literature concerning drones, RPAs, and AI comes out of the applied military history subfield.

target can determine how long they are surveilled. Longer durations of surveillance enable those monitoring the target to see more complex aspects of the person's humanity. There is an instance of an MQ-9 Reaper crew watching a group of nearly one-hundred villagers emerge after their strike to scrape the viscera off of walls and onto a burial sheet where they also collected larger fragments of what was once a man.

⁶ Wayne Lee, "Mind and Matter – Cultural Analysis in American Military History: A Look at the State of the Field," 1116.

Academic military history is divided into two interconnected and complementary subfields – traditional and new – each with their own methods and objectives for studying war. Traditional military history argues that war is worthy of being studied on its own terms and “comprises the ‘material and operational’ works that focus on the nature of weapons and the activities of armies within political, economic, and technological contexts.”⁷ New military history, often called war and society, concerns itself with “the more humanistic side of war: Who was in the military, and what happened to them while they were there?”⁸ Answering those simple questions have “begun to open up newer and more complex questions about values, motivations, and expectations” and provided a means of conducting cultural analysis through military means.⁹

Historiography

The study of war and society, also known as new military history, began in earnest with John Keegan’s *The Face of Battle* (1976). Keegan used famous British battles over the centuries to examine continuities and changes in British society. Through his study, he contended that the modernization of war resulted in increasingly detached experiences of war. Technological advance has increased standoff range of combatants and, as a result, they have lost “a sort of

⁷ Lee, “Mind and Matter,” 1116.

⁸ Ibid, 1117.

⁹ Ibid. Wayne Lee persuasively argues that military historians should perform cultural analysis to better understand the history of warfare. Lee’s insights into the influence of cultural values on the conduct of war provides a road map, of sorts, to conduct a historical analysis for war and society. Examining wartime violence opens avenues to examine “the cultural values of the society at war.” (p. 1129). Culture informs the historian about motivation and institutional norms. (p. 1130-1134). He also theorized that memory construction and memorialization are important factors as they provide further insights into values based on what combatants choose to emphasize or keep buried. Lee’s scholarship and methodology can be applied to examining changes in American culture over the course of the War on Terror through the concepts of emotions, intimacy, and drone warfare.

empathy with one's adversary."¹⁰ In other words, as the face of battle modernizes, it becomes increasingly faceless.

Certain historians have embraced Keegan's argument that modern warfare is increasingly impersonal and produced convincing historical works while others are more skeptical. Keegan's argument makes intuitive sense to the uninitiated. If a soldier cannot see who they are killing then they are more likely to keep killing without pause or second thought.¹¹ Scholars have even graphed the relationship between distance and intimacy with respect to killing.¹² Their conventional wisdom is challenged by other scholars who contend that physical separation does not necessarily correlate to decreased intimacy as revealed by felt emotion. This second group of historians are skeptical of the simplicity of Keegan's argument and demonstrate that the human mind has the power to overcome psychological barriers, even caused by physical separation, if given the right circumstances.¹³

Historiographically, this project falls at the intersection of these two major themes in military history. The first theme comes out of new military history's long study of the relationships between emotion, intimacy and warfare. The second is applied military history's investigation into the implementation of drone warfare and its inevitable evolution through the

¹⁰ John Keegan, *The Face of Battle*, 314. Whereas the combatants at Agincourt crossed swords face to face, the modernizing of war consisted of mechanization enabling combatants to stand-off at a distance. The honed skill of anticipating incoming blows by reading body language was lost as it was no longer necessary for survival on the battlefield. By the battle of the Somme, artillery was aimed at faceless men over the horizon. When the time came to engage a human, both men were wearing gasmasks and looked like a mechanical 'other'.

¹¹ Laurie Calhoun, *We Kill Because We Can: From Soldiering to Assassination in the Drone Age* is especially critical of the modern political-military entanglement and "lethal creep," 71-93.

¹² See Figure 1 in Appendix A. Lt. Col. David Grossman has a tidy chart which clarifies the solution as much as it oversimplifies the reality.

¹³ For specific discussions see: Bourke, *An Intimate History of Killing*, xviii. Phelps, *On Killing Remotely*, 48. Grégoire Chamayou, *A Theory of the Drone*, 113.

coming of artificial intelligence. The boundary between these themes offers a rich opportunity to explore the nature of remote warfare and whether or not remote operators are warriors or assassins.

Theme 1: Intimacy and Emotion in War

Studying emotional responses offers a window into understanding what a person, or group of people, believe to be important. A person's visceral response to a situation reveals the social and cultural values instilled in that individual and allows historians to investigate the society which produced them. The intimate connections formed between killers, victims, and observers can be revealed by emotional responses and provide another means of examining what it means to be human. The act of killing another human being causes incredible psychological and emotional trauma to the point where most humans are incapable of watching it, let alone committing the act.¹⁴ Sociocultural conditioning creates numerous psychological barriers to killing other humans and it takes considerable training and conditioning to create warriors with a capacity to overcome those barriers.¹⁵ Since "the characteristic act of men at war is not dying, it is killing," militaries have gone to great lengths to develop systems which make it easier to kill.¹⁶ Military establishments have long understood that it is easier to kill a faceless enemy at distance and have used that to create weapons which help keep the enemy in that zone of impersonality.

¹⁴ This is one of the main arguments in David Grossman's *On Killing: The Psychological Cost of Learning to Kill in War and Society* (1995). He claims that there is a tremendous psychological cost attached to learning to kill another person, and that surmounting the ingrained mental barriers to killing results in tremendous psychological wounding for the killer. He also argues that the easier a system makes killing for an ordinary person, the worse the psychological damage that results.

¹⁵ David, Grossman, *On Killing: The Psychological Cost of Learning to Kill in War and Society*, 249-261.

¹⁶ Bourke, *An Intimate History of Killing*, xiii.

The study of emotions, therefore, holds a key to unlocking deeper understanding of the levels of combat intimacy experienced by modern warriors. Since emotions are expressed by soldier and civilian alike, the interrogation of the emotional response by combatants can shed light into a shared human experience. If in some situation an ordinary soldier, or RPA pilot, reacts in a certain way then it is reasonable to expect any average person to react in a similar manner. This reveals how we can use the ordinary soldier, sailor, airman or marine as a means of examining the society they came from.

Scholars who examine the relationship of intimacy and emotions note that there is a wide range of emotional responses to any given situation. The more extreme a situation is, the more likely it is to produce extreme emotional responses in participants. War is the most extreme manifestation of human interaction and elicits the corresponding emotional reactions. Studying emotion in war has revealed that the act of killing transforms an individual. The emotions experienced range widely and often conflict. A combatant may fear their enemy and simultaneously empathize with the man they are killing.¹⁷ Emotions, and especially conflicting emotions, provide a unique means of understanding the immense personal significance placed on taking a human life. Since the emotional response of a human to a given situation will be shaped by their conditioning through “environmental contexts and cultural processes,” both the face of battle and socio-cultural values can be uncovered by emotional investigation.¹⁸

¹⁷ Bourke, *An Intimate History of Killing*, xiii. Combatants reported feeling “rage as well as exhilaration.”

¹⁸ Claire Langhamer, Lucy Noakes and Claudia Siebrecht ed., *Total War: An Emotional History*, xvii.

Most investigations into the emotions experienced in combat examined combatants who were face-to-face with their enemy for the kill.¹⁹ These soldiers and marines were in danger of being killed by their opponent, which produces different kinds and intensity of emotion. Their unique perspective is categorically different from what a drone operator experiences. Yet, if there is crossover between what a soldier or marine in the thick of it is experiencing and what a drone operator safely out of the fray is experiencing, then questions of emotion and intimacy may provide new means of addressing the human condition.

Theme 2: RPAs and Ethical Considerations

The emergence of remotely piloted vehicles on the battlefield has led to an explosion of scholarship concerning drone technology and their use in killing humans. The introduction of RPAs into battlefield operations elicited public fears fueled by Issac Asimov's writings and popularized by James Cameron's *Terminator* movies. Since drones massively amplify the reach and power of individual human actors and could be automated through AI, critics fear that future warfare will undervalue human life as killing in real life will look the same as in video games. Most studies investigating these ethical issues come out of applied military histories attempting to direct the implementation of this exciting and frightening technology.²⁰ Advocates argue that AI and drone technology could instead be developed to reduce human suffering. Ethical programming in the system would allow machine precision to properly differentiate combatant from non-combatant reducing or eliminating the fog of war ending excessive collateral damage.

¹⁹ Combat aircrew are mentioned on rare occasion, but are largely overlooked as are non-infantry and operators of naval vessels.

²⁰ Lee, "Mind and Matter", 1116. Applied military history looks at any aspect of war that provides meaningful lessons for military professionals.

If the marriage of drones and AI allows RPAs to become autonomous, this can be seen both as “progress toward humanizing war and an unprecedented danger to humanity.”²¹ Standing on this knife edge, applied military historians are attempting to direct future military endeavors toward the proper marriage of AI and RPAs and argue that humans are still vital to the moral decision-making process with respect to killing. Even in war, it is important to remember the “moral responsibility one has, even toward their own enemy.”²² There are many unknown variables at play in the implementation of RPAs, let alone RPAs controlled by AI, and the human element is still a vital check against immorality in the kill chain.

Applied military historians have argued over the proper way to implement RPAs and AI on the modern battlefield. At one level, it makes sense for leaders to want to remove their own forces from harm’s way in order to preserve life. However, this removal of humans from danger threatens to increase the tendency to utilize killing force since it is also the removal of a fundamental barrier to war. Men who do not want to die can protest their being sent to war. Additionally, this removal of men from harm’s way complicates the sense of fairness of the old tit-for-tat relationship between warriors. The resultant psychological dissonance produces a number of unique emotions among RPA operators that are worth paying attention to. Killing another human is always difficult to rationalize, but at least when a rifleman exchanges fire with an enemy there is a semblance of fair play. Even pilots can be shot down. Yet, RPA operators, even when their aircraft is destroyed, get to clock-out from work and go to their kid’s soccer practice or have dinner with the family. Applied military historians have examined these

²¹ Armin Krishnan, *Killer Robots: Legality and Ethicality of Autonomous Weapons*, 4.

²² *Ibid*, 167.

problems carefully and offered a number of solutions for military professionals with regards to RPAs and even AI since both are inevitable.

Contrary to Keegan's assertions, modern military technology has not removed the combatant from the intimate details of war. The complete and unprecedented dominance of the airspace over battlefields has kept all but a handful of conventional operators out of the fray concentrating combat intimacy. The proliferation of RPAs further concentrated combat intimacy into a few operators disembodied from their aircraft. The digitization of U.S. airpower has enabled airmen to experience an unprecedented level of one-sided intimacy with their foes. They have access to all the sordid details of their enemy's life while remaining detached and veiled through remote robotic embodiments. Their physical detachment combined with an increasing concentration of experienced-intimacy results in a high level of emotional entanglement and psychological dissonance. Modern warfare has decreased the time between taking the kill shot and returning to the home front. Sometimes it is only days and other times it is merely an hour.²³ This leaves little time to process the emotional trauma of ending another human being's life, further compounding the trauma in a vicious cycle. Far from the remote being a removed experience, the modern face of battle is increasingly intimate producing intense emotional reactions from the airmen involved in the kill-chain.

²³ Scott Lindlaw, "Remote-Control Warriors Suffer War Stress."

Chapter 1 The Rise of AI-Driven Airpower

Remotely piloted aircraft crews are unique in the history of warfare and their experience of war offers new inroads to understanding warriors as people. Unlike typical studies of killing in combat, RPA crews remain at the maximum physical distance while observing death in high-definition. The nature of their contributions to the war effort ensure that they have the opportunity to observe the full humanity of many of their enemies. By comparing their unique experience to other combat experiences, it is possible to better understand warriors as ordinary people in extraordinary circumstances; we are them and they are us.

1.1 Air Force History and Air Dominance in the Last Fifty Years

When considering air combat, most people typically envision the dogfights of the Second World War. Men in leather jackets under glass canopies closing into machine gun range on their enemy's tail in order to take a kill shot. Others may recall scenes of B-17s in a tight formation enduring black clouds of flak before being set upon by smaller and more agile single engine aircraft. Popular media etched these scenes into our minds where tragedy and triumph combine to create a heroic image of aircrew. Second World War aerial combat is so engrained, that even in the classic 1986 blockbuster *Top Gun*, F-14 jets equipped with sidewinder missiles capable of targeting, tracking and hitting a target beyond visual sight range, *have to* engage the MiG-28s with guns. If the movie had been realistic, the air combat would have consisted of missile warnings, flares, and death without either set of pilots ever laying eyes on each other. Modern air combat, with missiles and drones, is further removed from the world of *Top Gun* than *Top Gun* was from the Second World War.

Air combat changed rapidly in a very short period of time. In the Second World War, America fought peer air forces among the Axis powers. Peer status is important to understand for

air combat. The two forces are considered equal and therefore capable of inflicting heavy aircraft losses on one another.²⁴ In fact, more American airmen died in the skies over Europe than marines in the whole of the Second World War. However, by Korea and Vietnam, technological advancements had altered air warfare. Jet engines and homing missiles, which had only appeared at the tail end of the Second World War, enabled rapid intercept and engagement capabilities between aircraft. The US found itself in air wars against near-peer enemies who had aircraft capable of contesting American airspace dominance.²⁵ The US lost thousands of aircraft in an effort to achieve effective control over the skies of Korea and Vietnam. By the end of each war, America could utilize the airspace over the battlefield with relative impunity. Since the end of the Vietnam war, the USAF has not faced a near-peer adversary in combat. With the collapse of the Soviet Union, no aggressor nation has developed airpower capable of contesting American dominance, especially when augmented by allied nations. All American conflicts over the past fifty years have benefited from the ability of American airpower to freely operate in the skies over the battlefield. Airpower and dominance of the skies ensures that ground and naval forces can also act freely to engage the enemy. The synergistic capabilities of American all-domain warfare have resulted in remarkably low casualty rates in recent wars.²⁶

²⁴ By the numbers, the 100th Bomb Group out of Thorpe Abbots had a statistically impossible task for aircrew. Aircrew members had to survive 25 bombing missions over Germany. John “Lucky” Luckadoo told me during our trip to his old airfield Thorpe Abbots, where I had the privilege of escorting him, that he was one of four men from his flying training class (40 men) who flew for the 100th to survive 25 missions. He said “I guess I was *lucky*.” He repeated the story on his 100th birthday in 2022 for a local newspaper - Zapata, “Texas Centenarian, WWII Veteran Gets a Day Named in His Honor.”

²⁵ In a near-peer air war, one side has a clear advantage, but can still suffer by action from the disadvantaged side. The threat is far less than a peer rival, but not able to be dismissed as statistically irrelevant.

²⁶ Department of Defense, “Casualty Status.” Between 2001 and 2021, the US military (including DOD civilian casualties) suffered 7,078 killed and 53,356 wounded in all operations across the “Arabian Sea, Bahrain, Gulf of Aden, Gulf of Oman, Iraq, Kuwait, Oman, Persian Gulf, Qatar, Red Sea, Saudi Arabia and the United Arab

One of the most salient lessons of the Vietnam War for America's adversaries was that surface to air missiles (SAM), and man portable air defense systems (MANPADS) were cheaper and easier to field than attempting to develop any air forces capable of challenging American dominance. Yet even here, combat losses do not approach the levels of the Second World War. Of the aircraft lost in the past fifty years, most were due to mechanical problems, operator error, or training mishaps. The vast majority of combat losses were due to SAMs or MANPADS with one potential air-to-air kill of a fighter-type aircraft in 1991 when the US Navy lost an F/A-18C. It was initially deemed to have been shot down by an Iraqi SAM, but a CIA report released years later concluded that an air-to-air kill by an Iraqi aircraft may be more likely. Their overall conclusion was that the real cause of the shootdown could not be determined on the unclassified side.²⁷ Since that time, the US has been engaged in numerous conflicts in which airpower was utilized to a considerable degree.

Conventional combat pilots are still taught dogfighting in basic fighter maneuvers as part of initial training. Dogfighting builds the essential airmindedness required to produce a spirit of combat in the pilot and reinforces the importance of outthinking an opponent. In real combat situations, pilots rely on the technological advancement of so-called smart weapons. Fighter and bomber aircraft also rely heavily on support assets to remain airborne. Whether supported by command and control or refuelers, modern airpower provides an impressive array of effects-based capabilities for winning wars.

Emirates...Afghanistan... Guantanamo Bay (Cuba), Djibouti, Eritrea, Ethiopia, Jordan, Kenya, Kyrgyzstan, Pakistan, Philippines, Seychelles, Sudan, Tajikistan, Turkey, Uzbekistan and Yemen.”

²⁷ For more, see the “Intelligence Community Assessment of the Lieutenant Commander Speicher Case” from 27 March 2001.

During the War on Terror, the chance for a combat casualty for conventional aircrew was so low that it can be compared to RPA operators. For conventional aircrew, modern air warfare enables killing from altitude with negligible fear of being shot down. Air-to-air combat is virtually non-existent. Those near-peer adversaries with the means to challenge US air dominance lack the political will to do so.²⁸ While aircrew still faced the very real dangers of MANPADs and small-arms fire, the Islamic extremists in the War on Terror were relegated shooting at targets of opportunity among slow moving aircraft like helicopters and C-130s. Fast movers at high altitude were practically untouchable and conducted their missions with impunity. All conventional combat actions were captured on camera and viewed on a screen in debrief.

1.2 Rise of the Machines: Remotely Piloted Aircraft in Combat

Unmanned aircraft technology rapidly advanced after certain concepts emerged in the First World War, such as “the Kettering Bug, a biplane which flew on a pre-set course using an on-board gyroscope and altimeter.”²⁹ Various iterations were field tested and adopted until reconnaissance unmanned aerial vehicles (UAV) proved reliable for intelligence purposes in the Vietnam War. The technology proved combat ready when they were deployed alongside conventional aircraft in the Israeli-Arab conflict known as the Yom Kippur War. Drones helped score air-to-air victories and proved that, even with the technology in 1973, they could be successfully deployed in dynamic combat roles.³⁰ America employed UAVs in the First Gulf

²⁸ It is worth noting that if certain unnamed near-peer adversaries did elect to start war with the US, then the air war discussion would be very different. The War on Terror is a unique opportunity to study asymmetric airpower as a foil for RPA operations and understanding experienced intimacy.

²⁹ Berenice Baker, “UAV Evolution – How Natural Selection Directed the Drone Revolution.”

³⁰ Baker, “UAV Evolution – How Natural Selection Directed the Drone Revolution.”

War where “Iraqi troops actually attempted to surrender to a UAV loitering over their position.”³¹ UAVs proved so versatile that every American conflict since that time has utilized them in an increasing manner.

After the terrorist attacks on 9/11, the US began its War on Terror which lasted from 2001 until 2020. During that period, UAVs were rebranded as RPAs due to popular public fears that robots were killing people instead of humans; the term unmanned was replaced with remotely piloted. RPAs quickly became an essential component of modern war as they offered a unique and flexible capability for combatant commanders operating in an unconventional conflict. RPAs had far longer loiter-time over target since crews could be switched out on the ground while the aircraft remained airborne. They were slow moving and small enough to avoid detection without sophisticated technology. Their onboard cameras were powerful enough to track Taliban and Al-Qaeda militants for days, especially when individual systems overlapped surveillance so one could land and refuel while another kept watch. Crews could simply switch viewing from one aircraft to another. New sensor suites and increasing size allowed for newer variants to be outfitted with weapons. Surveillance missions quickly incorporated the capacity to launch air-to-ground attacks.³² The trend of increasing sophistication and lethality of RPAs continues through today.

³¹ United States, *Intelligence Successes and Failures in Operations Desert Shield/Storm*.

³² Baker, “UAV Evolution – How Natural Selection Directed the Drone Revolution.”

1.3 Asymmetric Airpower: Conventional Pilots, Danger, and Destruction at Distance

Conventional aircrew, those who still occupy an aircraft flying over the battlespace, kill at a distance which provides a high level of protection from combat engagement. The USAF has achieved complete battlespace dominance creating an asymmetric nature of aerial combat over the last fifty years. Modern military operations can only succeed if air dominance is achieved and maintained. In the thousands of missions flown over the two-decade long War on Terror, aircrew were more likely to suffer mishap than from enemy combat actions.³³ Accidents and aircrew error were also more likely to kill crew than enemy fire. The level of airspace dominance achieved by modern air forces reduces the danger of combat to a negligible amount when compared to the wars of the first seventy-five years of the twentieth century. While by no means exactly the same, modern aircrews are removed from battlefield threats at levels comparable to RPA crews.

When I was flying my KC-10 over the battlespace, I was rarely concerned with being targeted by ISIS from the ground, and they had no airpower assets capable of engaging us. We knew the weapons they had lacked the capability to be much of a threat. I was primarily concerned with experiencing a mid-air collision with an eager receiver aircraft looking for a top-off on gas before continuing their “real work.” My daily combat mission was ensuring the gas in

³³ So far, I have had six ‘combat’ deployments flying refueling missions over Iraq, Syria, and Afghanistan. I know I was shot at twice, and may have been shot at a third time. I was targeted by surface to air missiles every mission, but they never launched as the country targeting us, though unfriendly, had no desire to start a war with the US or its allies. The closest I came to sustaining combat injuries occurred on my first deployment when I was moving through the cabin of my KC-10 over Iraq. While moving, the aircraft experienced something which caused it to violently jerk to the side and I found myself with burns on my hands. My aircraft commander wrote up the incident stating, “1Lt Jordan Bolster received injuries while on a combat mission over Iraq. For his efforts, I recommend he receive a purple heart remedial oven training.” We had hit turbulence while I was trying to cook pizza for lunch in our onboard oven. My hand, ungloved, hit the back of the oven which had been set at the max temp of over 450°.

my tanker was “on time, on altitude, and on airspeed” for the receivers so they did not have to waste precious minutes coming to get me. Instead, I did everything in my power, once I had figured out the KC-10 operational rhythm, to anticipate fuel needs in the relevant airspace. Most of us in that community felt a paternalistic desire to protect and support those on the ground through supporting those in the air.

Support aircraft, like mine, are a force multiplier. We exist as a mean of extending the loitering time of those at the tip of the conventional spear. For every pound of weight held aloft, it requires a certain amount of fuel burned to keep it there per hour. To hold more gas a combat aircraft must sacrifice ordinance and vice-versa. Modern fighters and bombers are incredibly effective at what they do, but are designed to allow tankers to hold the fuel weight in order to maximize payloads. America’s complex modern air-war machine is predicated on an effects-based model of operation providing a destructive capacity for combatant commanders unlike most anything seen in history. We all have a part to play in order to ensure synergistic combat operations.

Grossman morally qualified the destructive capacity of conventional aircrew in the Second World War by pitting their actions against those of Sennacherib of Assyria in 689 BC. He concluded that the distance between destroyers and the destroyed reveals intent. Intent is an important variable for the justification and rationalization of incredible violence. Bomber crews during the Second World War killed combatants and non-combatants alike razing cities to the ground. Aircrew of this period including “pilots, navigators, bombardiers, and gunners in these aircraft were able to bring themselves to kill these civilians primarily through application of the mental leverage provided to them by the distance factor. Intellectually, they understood the

horror of what they were doing. Emotionally, the distance involved permitted them to deny it.”³⁴ Grossman claims that both militaries produced a similar level of destruction, however “the horror of Babylon staggers the imagination.”³⁵ In that ancient massacre, King Sennacherib of Assyria ordered his soldiers to kill all living things in the city and then burn it with flame. He tore down the defensive walls and even threw soil into the river to be carried away. Sennacherib wanted to demonstrate his power over everything in Babylon from their bodies, to their homes, and even the land. “Physically the effect was the same, but *psychologically* [emphasis is Grossman’s] the difference is tremendous.”³⁶ Though the effects are nearly identical, there is a qualitative difference between the destruction of the bomber crews and that of a sword bearing iron age army. This illustrates the all-important factor of distance. A bomber releasing death from twenty-thousand feet may incur collateral damage, but the crew is ostensibly aiming at the war-producing potential of their enemy to end the conflict. Civilians caught in the cross-fire were merely unintended victims. The slaughter in Babylon was different. Though the carnage could have been exaggerated by ancient scribes, its purposeful atrocity was echoed in the Nazi destruction of the Jews and in a smaller scale by Lieutenant Calley in My Lai.³⁷ Distance reveals intent and moral culpability. The means of attaining a goal are as important, or even more important, than the goal itself. Ten killed as collateral damage with a bomb is categorically different than holding them down and hacking them apart with a blade one-by-one. The second act is more intimate, but it is also a betrayal of intimacy. The betrayal requires a certain

³⁴ Grossman, *On Killing*, 100.

³⁵ *Ibid*, 104.

³⁶ *Ibid*, 102.

³⁷ *Ibid*, 104.

psychopathy, potentially born of minds destroyed by violence and acts of killing, that non-killers cannot fathom. The violence of the first act can be morally reconciled, the second is far more problematic.³⁸

Conventional aircrew provide a means to conceptually bridge the intellectual gap between what soldiers on the ground experience in combat and what the RPA community experiences. For over fifty years, pilots and aircrew have flown missions supporting American military operations in uncontested airspace. There has been little or no worry of being shot down or even engaged by the enemy for the vast majority of pilots who fly similar to the situation for RPA crews. There are noteworthy exceptions among special forces operators, the helicopter community, and smaller cargo planes that resupply FOBs (Forward Operating Base). These platforms often received ground fire from machine guns and rocket propelled grenades (RPGs) throughout the War on Terror. However, long gone are the days of the Second World War with massive bomber formations and fighter escorts traveling deep into enemy territory braving ground fire and air-to-air engagement. Aircrew in the fighter, bomber, and strategic air mobility communities are as removed from the immediate threat of death in war as from the fighting they help to support. We are, in many ways, above the din of battle. The primary threats for modern conventional aircrew come from the nature of stepping into machines that hurtle through the sky at dizzying height and speed. We risk life and limb each time they strap on an aircraft in a way RPA crews do not. Additionally, we operate inside the weapon engagement zones of land-based

³⁸ Grossman, *On Killing*, 106.

surface-to-air missiles positioned in unfriendly nations.³⁹ Fighter and bomber crews have the added risk of flying missions only feet away from live ordinance. Beyond these exceptions, there are many similarities between conventional combat aircrew experiences and those of RPA crews who fight combat stateside.

In terms of engaging the enemy, conventional aircrew partake in strikes in much the same manner that RPA crews do.⁴⁰ One primary difference is that conventional aircrew actually feel the missile or bomb depart the aircraft when they pull the trigger. Nevertheless, the general pattern between RPAs and conventional aircraft is similar. Combat aircraft are tasked either to attack a predetermined target or sent to loiter over a certain portion of the battlespace to provide flexible options for close air support (CAS) for developing situations on the ground. Usually, these involve a TIC (Troops in Contact) called in by a JTAC (Joint Terminal Attack Controller) and the need is urgent.⁴¹ The aircraft targets the enemy with onboard weapons directed by a support team and the strike is recorded by various cameras in the sky. The aftermath of a strike is reviewed later when the crew is back on the ground safely away from mission dangers.⁴²

³⁹ These supersonic telephone poles would have made short work of my KC-10. In fact, we would not have known what hit us. We knew they were 'out there' tracking us, but if they would have flown off the rail aimed at my aircraft then the missiles would not have been our problem anymore.

⁴⁰ Of course, there are differences and I am sure that a fighter-jockey or a bomber-bro would be quick to correct my assessment for technical accuracy.

⁴¹ Phelps, *On Killing Remotely*, 232. The process is nearly identical for RPA crews and conventional fighter/bombers. Whatever asset can supply the support is called upon. It is also an intense period of time. Aircraft, especially in the War on Terror, were primarily used to support the mission on the ground. Providing that support in a timely manner is crucial since the lives of friendlies are on the line. Failure to act swiftly results in the deaths of American, or allied, brothers and sisters in arms. That stress is a heavy burden for anyone involved.

⁴² Those dangers include but are not limited to the mechanics of flying, weather, enemy fire, accidents, and the physical stress put on the body by operating in an environment that humans were not designed for.

One emotion shared by most conventional aircrew is a sense of responsibility and duty toward those on the ground. A fear of death has been replaced with a fear of failing others. The War on Terror was unique from other American wars involving aircraft in that combat was mostly conducted through counterinsurgency (COIN) operations. This meant door to door fighting and population control. Aircraft designed for air superiority, strategic bombing, or interdiction were repurposed as ground attack aircraft. For loiter time, they refueled in air and were able to provide air support for longer periods. This system of coverage for troops on the ground was an integral reason for the low casualty rate among American and allied forces. Soldiers and marines on the ground provided security, legitimizing local governmental efforts in Iraq and Afghanistan, knowing they had a wide array of assets overhead covering their efforts.

Chapter 2 Airpower and Intimacy in the War on Terror

As a tanker pilot, my combat deployments were concerned with ensuring there was fuel available for fighters, bombers, and support aircraft covering specific regions or even entire countries. My crew and I had an operational, and at times strategic, conceptualization of the battlefield.⁴³ The intimacy we experienced was amongst our crew and deployed community. Since we neither target nor shoot the enemy, our combat role is unique. We supply fuel for the fight. Without us, conventional air support would be extremely limited or would have to be based much closer to the actual fighting. Our operations are vital to the fight, but the degree to which we participate in combat is up for debate. We are in theater and in danger as much as any other aircraft flying, but we leave the killing to others.

Aerial refueling tankers, like other strategic mobility aircraft, can be thought of as a foil to RPAs in important ways. We both engage in a sort of warfare that falls short of full combat. Questions surrounding what constitutes real combat can cause emotional turmoil as those who took an oath to serve honorably find themselves striking an enemy who cannot strike back.

2.1 Face-to-Face: The Psychology of Killing While in Real Danger of Dying

One of the common characteristics of all humans is our ability to feel emotion. By and large, people experiencing similar events will feel similar emotions regardless of cultural

⁴³ This assumes the military paradigm describing three levels of military engagement with the enemy from small unit up through whole-force posture. These levels can describe actions which would cross categorical boundaries. However, they are generally understood as follows. The “tactical level” is the lowest level and concerns direct military engagement of units on the battlefield. The “operational level” concerns larger engagements of military groups with emphasis on the logistical and support elements which enable military forces to continue the fight. The “strategic level” is concerned with enfolding military actions into the political objectives of a nation. Strategy is the vision of leadership translated into an understandable concept and transmitted down to the tactical level of fighting.

background. We can all understand what it is to be happy to see a loved one or heartbroken when they die. Our heartbreak is often compounded when that loved one's passing is unexpected or violent. The love of brothers-in-arms is no different. Combat has always offered a unique lens to examine emotional response as a means of understanding what is valued by those participating in combat. Those values can help condition emotional responses so that, while humans all feel a wide range of common emotions, there is a level to which culture can condition the degree to which those emotions are felt or expressed.⁴⁴

The lawful killing of an enemy in pursuit of militarily relevant goals is categorically different from murder because intent is as important as the act.⁴⁵ An American soldier, sailor, airman, or marine engages in political violence on behalf of the US government. The purpose of these combatants at war is to kill their enemy. There are rules and traditions of war dictating who can and cannot be killed, and by whom. Warriors are allowed to kill other warriors. Non-combatants and non-military property are supposed to be spared unless military necessity requires otherwise. When battlefield context requires the engagement of non-combatants and non-military property then proportionality and necessity dictate what constitutes an acceptable level of civilian loss. This collateral damage can take a heavy toll on warriors since they are people. A technical difference does little to assuage the internal conflict many warriors feel taking the life of a human or destroying their livelihoods. Yet, this is the burden of their oath to

⁴⁴ Barbara Rosenwein, *Emotional Communities*, 25-26. Rosenwein refers to a group of people with shared emotional responses to similar stimuli as "emotional communities." Emotional communities are formed through "culturally patterned styles of membership" whereby the "social and relational nature of emotions" create a "common discourse" among members "internalizing norms that determine how we think and act" depending on the group. "Emotional communities are not constituted by one or two emotions but rather by constellations — or sets — of emotions."

⁴⁵ Bourke, *An Intimate History of Killing*, xiii.

support and defend the Constitution of the United States. In the execution of their lawful duties, they are warriors, not murderers.⁴⁶

The extreme mental, physical, and spiritual duress of combat often elicits extreme emotional responses from participants. War is a comedy of extremes. The full range of circumstantial possibility for feeling exists within war's long periods of "boredom punctuated by moments of extreme terror."⁴⁷ The transition from tedium to intense excitement is often rapid and produces an amplifying effect on the moment. There are many terrors in warfare which can cause trauma and emotional damage. The fear of death, for self or a comrade, is certainly an important aspect of the equation. However, the act of "looking another human being in the eye, making an independent decision to kill him, and watching as he dies due to your action combine to form the single most basic, important, primal, and potentially traumatic occurrence of war."⁴⁸ Healthy human beings have such an aversion to taking the life of another person that ordinary soldiers often risk death and ridicule for not pulling the trigger.⁴⁹ Some ignore the order outright unless

⁴⁶ If a warrior exceeds their authority in battle and does kill a human unlawfully, then they can still be held accountable under the Uniform Code of Military Justice (UCMJ) as a murderer. Military tribunals are convened to mete out justice in these circumstances.

⁴⁷ *The New York Times Current History: The European War*. One of the earliest recorded versions of this saying comes from early in the First World War in a monthly magazine compiled and published as a book by the New York Times. On page 979, a story recounted what an anonymous cavalry soldier wrote in his diary; "The best definition I have heard of modern warfare is, 'Months of boredom punctuated by moments of extreme terror.'" There is a chance that versions of this saying extend even further back in time.

⁴⁸ Grossman, *On Killing*, 31.

⁴⁹ Bourke, *An Intimate History of Killing*, 64. S.L.A. Marshall conducted an influential study on firing rates of WWII veterans in 1947. He interviewed hundreds of combat veterans who served in the Pacific Theater. The study claimed that no more than 25% of men had fired their weapon at the enemy even after accounting for killed, wounded, and non-participants. It was not until 1988 that his statistical analysis was revealed to be flawed. Nevertheless, his findings coincided with other independent studies revealing that a small percentage of people do the majority of the killing work of war. The phenomenon for non-trigger pullers was likened to buck fever in hunting. The hunter has their quarry in sight, but fails to pull the trigger due to an internal conflict. A similar feeling has been described by soldiers who found it difficult to kill an enemy they had the chance.

compelled, and others will purposefully miss their target even if they do shoot their rifle. S.L.A. Marshall made the influential claim that in the crucial moment before decisively taking action to kill another person, this sort of warrior “becomes a conscientious objector.”⁵⁰ This decision to disregard training, propaganda, and even survival has been linked to the emotional barriers built-in to the psyche which act as safeguards. Empathy with a fellow human, in particular, is a powerful psychic force which must be overcome to enable killing, and there is a terrible price to pay for surmounting these kinds of barriers.

Psychologically, many barriers that exist which prevent an ordinary person from killing their fellow man. The Judeo-Christian ethic against murder is firmly embedded in both legal and cultural heritage of American society. Stemming from the commandment “thou shalt not kill” and Jesus Christ’s Sermon on the Mount from Matthew 5, this deeply ingrained idea concerning the inherent value of human life is a potent psychological barrier against killing, even for the non-religious. The need to rationalize killing led to the Just War Doctrine and the reassurance that killing in war is categorically different than murder, so long as it is sanctioned and directed at the proper target.⁵¹

Another important barrier to discuss is that of distance, both emotional and physical. Physical distance can inhibit or enable the killing of another human being in significant ways. One of the more obvious ways distances inhibit killing is that it is more difficult to find and hit a

⁵⁰ Grossman, *On Killing*, 29.

⁵¹ Bourke, *An Intimate History of Killing*, 256-293. Here Bourke dedicates all of Chapter 9 to ‘Priests and Padres’ from America, Brittain, and Australia who supported the war effort by rallying the troops across numerous wars. The righteousness of a cause is an important motivating factor for any warrior heading to combat and can help motivate them to fight effectively.

target at range. A sword can only extend the killing reach of a man so far. A rifle extends the will to kill further, but the sighting mechanism and lighting can interfere with aiming. Therefore, physical distance can provide a target with cover or time to escape death. However, there is another factor to distance that is less material, but still substantial. There is a well-documented inverse relationship to physical distance's effect on the psychological capacity to carry out a killing. The closer one gets to the target, the more difficult it is to psychologically justify the kill. At a certain distance, any mind can imagine its enemy as 'other' and rationalize the need to destroy the inhuman. The inhibitions to killing become much more powerful the closer the killer physically is to the victim.⁵² Closing the distance reduces the ability to 'other' by increasing intimacy and enabling the killer to see the victim as a person just like themselves.⁵³ At this point, there is an emotional refusal to carrying out a kill deemed unconscionable. All of these psychological and physical barriers support the conclusion that "the average soldier will not kill unless coerced and conditioned and provided with mechanical and mental leverage."⁵⁴ It is reassuring to think that ordinary people, even with training and the threat of death can still act in a relatively decent way in war. Humanity is constructed psychologically and expressed emotionally.

⁵² Grossman, *On Killing*, 98. Grossman produced a chart showing an exponential decrease between distance and resistance to killing. The highest resistance to killing happens at what Grossman describes as the "Sexual Range" and falls off as he moves to the max range of "Bomber, Artillery." He does a deep psychological analysis of the kinds of people who can kill at a given range concluding that it is typically extraordinary people who kill at close range. Generally, only specific people in a specific situation will kill at close range, while almost anyone could kill at max range given the proper impetus See Appendix A for Figure 1.

⁵³ *Ibid*, 30.

⁵⁴ *Ibid*, 31.

A decently behaved individual makes for a poor soldier. The fact that humans resist killing one another is well understood by the modern military, which actively seeks to prevent those sorts of people from being placed in a position to kill. Basic training starts the process of conditioning a citizen to become a soldier. Lieutenant Colonel David Grossman identified a number of factors the military recognizes that help people overcome resistance to killing. One of the first factors is the demand of an authority figure which removes or dilutes feelings of moral responsibility for a soldier's own actions. Israeli psychologist Ben Shalit observed that "When absolved from responsibility for their acts, people are potentially much more aggressive."⁵⁵ This pattern was conclusively demonstrated through Dr. Stanley Milgram's now famous studies at Yale where up to sixty-five percent of participants were willing to inflict lethal electrical shocks on total strangers so long as they were prompted to "please continue" by an authority figure.⁵⁶ Beyond the demands of authority, another factor which makes it easier to kill is further diluting responsibility through group dynamics. Being part of a group enables blame to be placed on the group as the organization doing the killing rather than the individual.⁵⁷ Distance, often built into the combat force through technology, further aids humans in killing one another. Physical and emotional distance aid in maintaining dehumanizing myths and the 'otherness' of the enemy. Shooting at a silhouette is far easier physically and emotionally than striking with a blade and feeling flesh and bone give way beneath each blow. Target relevance is a fourth factor in the

⁵⁵ Ben Shalit, *The Psychology of Conflict and Combat*, 51.

⁵⁶ Grossman, *On Killing*, 141. Men made up the majority of participants, but both men and women were subjects of the experiment. Dr. Milgram was a Jewish man heavily influenced by the Holocaust which had ended only sixteen years prior to his experiments. One salient point of his experiments remains that ordinary people who blindly follow authority enable regimes like the Nazis.

⁵⁷ *Ibid*, 149.

equation concerning the decision to kill. Sometimes it can override a number of other factors. The higher the perceived target value, the easier it is to kill them. Conversely, potential targets with little value may not be worth the psychological effort to kill them. Relevance also plays a role in collateral damage and may influence the killer to stay their hand.⁵⁸ The final factor in easing the means of killing is the aggressive predisposition of the killer. There is a small percentage of the civilian population from whom soldiers come “who are predisposed to be ‘aggressive psychopaths’ and apparently do not experience the normal resistance to killing and the resultant psychiatric casualties.”⁵⁹ In addition to the small percentage of aggressive men who seem to need no push to be violent, there is a larger group of ordinary soldiers who will act more aggressively so long as they feel that they have been absolved of culpability in some manner.

For ordinary soldiers fighting face-to-face with their enemy, killing men resulted in a diverse combination of emotional responses. Some were unable to recall their actions without being overcome with dizziness or nausea while others found that the act of killing could invoke intense feelings of pleasure to the point where “butchery was a turn on.”⁶⁰ Those in the latter group found it easier to either remain silent about their experiences or to pretend they had hated the war. To admit their dirty secret was to elect becoming a pariah among civilians and many veterans alike. This helps explain why the pleasure of combat was discussed little prior to

⁵⁸ Grossman, *On Killing*, 171.

⁵⁹ *Ibid*, 180.

⁶⁰ Bourke, *An Intimate History of Killing*, 1. William Broyles, a combat soldier himself, articulated this strange phenomenon in 1984. With the authority of someone who knows, “Broyles asserted that when combat soldiers were questioned about their war experiences they generally said that they did not want to talk about it, implying that they ‘hated it so much, it was so terrible’ that they would prefer it to remain ‘buried’. Not so, Broyles continued, ‘I believe that most men who have been to war would have to admit, if they are honest, that somewhere inside themselves they loved it too.’”

specific studies that began examining the nature of violence in the latter half of the twentieth century. Interestingly, the men who admitted to experiencing varying degrees of pleasure were found across all walks of life. Not only professional soldiers, but citizen soldiers and draftees admitted to experience. We know now that pleasure from combat is not uncommon and that knowledge reveals an uncomfortable truth about ourselves. Human nature is not only violent, but enjoys that violence.

Pleasure in hunting and killing humans can be compared to the pleasure of hunting and killing animals. The adrenaline and power felt by an individual who controls life and death is a potent combination. Many hunters attest to developing a deep connection to their prey, especially when the animal puts up a fight. Similar connections have been attested to by combat veterans when killing their enemy. After the war in Vietnam, American marines reflected on their fighting and believed they had formed an intimate connection with the young Vietnamese soldiers they had killed. The dead joined their killers as “allies in a bigger war of individual existence” and in having killed “the grunts of North Vietnam, the grunts of American had killed a part of themselves.”⁶¹ There is a twisted logic binding this chaotic mixture of pleasure and guilt. The rationalization process people go through is itself the focus of numerous studies that extend beyond the scope of this present work.⁶² What is important to understand is that this pattern is not restricted to certain people who are easily identifiable by a prescribed set of characteristics.

⁶¹ Grossman, *On Killing*, 38.

⁶² An explanation of the psychological rationalization of pleasure through killing can be found in Grossman, Phelps, Bourke, Shalit, and Marshall, to name a few. Many of these authors agree that those who kill in battle find themselves somehow linked to their slain enemy in an intimate power relationship. Killing initiates an intimate connection that some find pleasurable and others find deeply troubling.

The phenomenon is found in members of every caste, race, social class, or economic background, and “numerous studies indicate that combat veterans are no more inclined to violence than nonvets[sic].”⁶³

Whatever their psychological predisposition may have been, combat veterans are trained to overcome all of the barriers and resistances to killing others. After all, killing is their primary function in war. The conditioning that they go through in order to shortcut psychological resistances to killing takes a toll on mental and emotional health. Those who must overcome stronger barriers in order to kill suffer a higher level of trauma as a result. The rationalization process, for these individuals, becomes a more intricate, intimate, and difficult process to navigate.⁶⁴ It could very well be that by overcoming the intimate barriers to killing in oneself, a killer injures their own soul. The ease with which modern technology makes killing is violating intimacy not only between combatants, but within the very person pulling the trigger, or now, typing in the correct keystroke.

One of the main differences between RPA crews and soldiers and marines engaged in combat on the ground is the degree to which death is present in their military duties. RPA crews are in no physical danger from combat, whereas, for ground forces, death is an ever-present threat for themselves, their team, and their enemy. Therefore, death means something different for RPA crews. Remote warriors watch death reach both for the enemies they stalk and the friendly forces whom they are responsible for supporting, but not themselves. For ground forces,

⁶³ Grossman, *On Killing*, 180-185. The quote is found on 180.

⁶⁴ *Ibid*, 190-191.

death affects every aspect of existence on the battle front. Death intensifies emotional responses during combat. Fear becomes sheer terror, excitement transforms into erotic pleasure, and a sense of duty develops into a code of honor. The psychological pressure of death's presence has the power to alter perceptions of reality conditioned by peacetime. This explains why some warriors act differently in combat situations than they otherwise would at home. Stressors led to instances of revenge killing whereby a warrior, seeing the death or injury of a friend, flew into a fit of rage killing people without restraint.⁶⁵ Here, lost intimacy is closely tied to the emotional reaction of these killers. The stronger the attachment to a friend killed, the more violent the retaliatory strike. RPA operators do not worry about the person next to them dying, but still direct a paternalistic level of protection to their troops on the ground. Retaliatory strikes in the heat of passion are more difficult in RPAs due to the number of people involved in a kill, but there is also little chance of a target's being able to escape once identified.

2.2 How Conventional Aircrews Overcome the Psychological Resistance to Killing

Conventional aircrew undergo years of training, costing millions of dollars per person, in order to become qualified personnel useful for militarily relevant situations. The USAF's process can last two to three years before churning out a fully trained pilot. Undergraduate Pilot Training begins with a screening process to ensure that those selected are not only physically capable of keeping up with the demands of flying, but also that they can withstand the psychological strain of the whole process. Pilots are evaluated at every step of the process. They are rack-and-stacked against their peers to figure out who is best suited for specific airframes and missions sets the

⁶⁵ Grossman, *On Killing*, 179.

USAF needs to fill. An aggressive predisposition, to a varying degree, is required in order to succeed as a pilot. Those with more of it typically end up in the fighter and bomber community. Those of us with a little less go to air mobility flying airlift, airborne support, or tanker missions. After completing this level of training, newly minted pilots undergo a seasoning process to become tactical experts in their airframes. This process takes years before a modern pilot is considered ready for worldwide employment. Fighter and bomber pilots work their way through training to live-fire ranges to practice dropping ordinance on dummy targets. The process usually culminates in an operational exercise known as Red Flag.

Red Flag is a large-scale integrated exercise designed to mimic an air war against a peer adversary. Hundreds of aircraft participate from the US and its allies. It is designed to simulate combat experiences as closely as possible for new and inexperienced aviators to be able to understand how to handle the pressure of combat. Red Flag was born out of air-to-air losses suffered in Vietnam and the attempt to create better combat pilots. After conducting a study of combat effectiveness in the Vietnam War, the USAF discovered that if pilots could survive their first ten combat sorties, then those pilots were not only more likely to survive the war, but were also far more lethal.⁶⁶ Maneuver, timeline, and even trigger pulls are all made to be as close to being authentic as possible so that when real combat does occur, these pilots do not have to think about what they would do. They are not only prepared for battle, but have had the opportunity to reflect on how they actually responded to simulated combat stress.⁶⁷ This provides these pilots

⁶⁶ Brian Laslie, *The Air Force Way of War: U.S. Tactics and Training After Vietnam*, 108.

⁶⁷ *Ibid*, 109. Pilots often testify that Red Flag exercises are actually far more complex, dangerous, and difficult than real combat operations.

with the opportunity to reflect and know how they would actually respond to combat. There is less chance for a person who has undergone this training to react in a manner different from their Red Flag experience. Therefore, if a pilot freezes or knows they cannot bring themselves to pull the trigger, there is one final opportunity to face that psychological barrier before proceeding to the real thing.

Years of training and military conditioning prepare pilots to accept and receive orders. Those who might reject orders to kill due to personal conviction are weeded out. There are always people who deny to kill in the moment before the trigger pull, but their ethical and professional training often dictates that response. It is far less likely for a pilot to decide not to kill in the same way S.L.A. Marshall claimed riflemen did in the Second World War. Authoritative demands come in the form of pre-mission intelligence briefs of targets or from radio calls from beleaguered friendly troops on the ground. There is an intense emotional pull for aircrew who hear of troops in contact (TIC). Their training and relatively protected position in the sky combine to create a moral duty to respond to the calls for help regardless of personal risk.

There is little room for group absolution outside the kill chain for conventional aircrew. Single seat fighter-bombers are a case in point. Here the pilot in the seat makes the final call. They will be supported by a whole network, the kill chain previously discussed, but they pull the trigger. Group absolution comes in the form of wingmen in the air and the squadron members back at base. Everyone is in the fight together against a common enemy. This helps form a unique combat bond for airmen. The intimate few who undergo this ordeal also join a fraternity stretching back to the First World War where pilots were likened to the knights of the air. This legacy of honor legitimizes violence and provides an opportunity for emotional distance from killing enemies and emotional attachment to other knights of the air.

Fighter and bomber aircrew actions fit the traditional criteria for warriors engaging in combat, even during asymmetric battlespace operations. Sometimes they would trade blow for blow with their enemy and risk life and limb when dropping death from under their wings. Other times, they would merely loiter while waiting to get a call, only to return to base without having dropped anything. Attacks exposing aircrew to risk were conducted quickly with pilots returning to safe altitudes or base afterwards for debrief. They would watch their strikes, often captured by RPA cameras, for battle damage assessments and to prepare for follow on action.

2.3 Combat Intimacy for Non-Combat Conventional Aircrew

If combat is taken to mean a struggle or a fight, it implies that participants have an almost transactional relationship. Punch is traded for punch. Archers on the field exchange arrows or face the enemy's cavalry charge. Aircrew in bombers over Europe or Japan had to endure withering flak and fighter attacks. However, modern warfare is no longer a symmetrical fight. Asymmetry derived from battlefield dominance has shifted the threshold of combat to the point where a tanker with no defensive systems can fly above the din of combat in relative comfort. Our crews enjoyed the 'finest' galley cuisine from handmade pizza and aircrew stew to mozzarella-sticks.⁶⁸ There were definitely missions that were more exciting than others, but not a single KC-10 was lost in combat in a twenty-year war. The physical danger we were in over the battlefield came from very real ever-present threats of SAMs. But those who had the capability to kill us had little-to-no real will to do so and those who had the will lacked sufficient capability.

⁶⁸ The KC-10 had two ovens and two fridges. We would bring food and ingredients from the flight-line chow hall to make any number of snacks and meals to eat during our six-to-twelve-hour missions. Motzzi-sticks refers to deep-fried mozzarella sticks we could request on our pre-mission aircrew meal form. It is a rough life, but someone has to do it.

This situation is similar for all tanker and cargo aircraft flying in that battlespace. It also extends to other support aircraft loitering in the skies over a battlefield. Our primary dangers came from other friendly aircraft and other normal flight risks, such as the takeoff and landing phases. We watched the strikes we supported on television screens and saw the deaths of unknown humans. It still affected us, and we were only tangentially involved in their deaths.

RPA crews fly their missions enjoying a similar level of comfort and physical safety from combat as those of us who were non-combat aircraft. Whereas they do not share in the normal physical dangers of flying, they do have a deeper psychological entanglement. They punch without ever worrying about being punched back.

2.4 How RPA Crews Overcome the Psychological Resistance to Killing

As a category, the capabilities of RPAs enable greater ease in overcoming the psychological resistance to killing than any other non-nuclear weapon system for an ordinary soldier. From initial training through the first trigger pull, the RPA weapon system is designed to minimize and overcome the emotional, physical, and psychological barriers of killing another person. This has ramifications for emotional health and intimacy as revealed by incidents of PTSD.

Before personnel are selected for duty in RPAs, they undergo a considerable amount of screening. Early in the pipeline process, the US Air Force holds sobering discussions on killing. RPA crewmembers are told that their “job was to kill people and break things.”⁶⁹ This information is provided up front with the goal of getting pipeline students to take a sober look at

⁶⁹ Jethro Mullen, “Report: Former drone operator shares his inner torment.”

the reality of RPA operations. This is also a unique attitude that the USAF takes toward RPA operations. Other American military branches utilize RPAs as well, but the USAF is unique in its decision to hold frank conversations about killing before time and money are invested in individuals. The service's strategic culture has enabled it to look ahead and realize that it is better to find potential non-firers early on than in the crucial moment of combat.⁷⁰ This process is designed to find individuals with a predisposition for aggression lowering their thresholds for killing. After completing initial training, RPA crewmembers are assigned to an operational unit where their first missions often involve combat operations.⁷¹ Unlike pilots who go through seasoning before deploying to combat zones, "RPA personnel serve as the pilot in command or qualified sensor operator and contribute to the fight in their first operational squadron on day one of their arrival."⁷²

The RPA community has skillfully interwoven authority figures into the whole process of the kill chain. The nature of RPA operations not only distances crewmembers from their aircraft, but also distances them from other portions of the kill chain. Intelligence personnel in a variety of locations across the world can have a part in the operations of RPAs flown from the US. Military and political leadership only need to establish contact with the operators to order a strike. No longer does the commander giving orders to kill and prompting the operator to fire have to be collocated with their troops. This fact is not meant to imply that RPA operators do not

⁷⁰ Lee, "Mind and Matter," 1125-1128. See Lee for a discussion on USAF strategic culture. Phelps, *On Killing Remotely*, 49-52. See Phelps for a discussion on the differences in attitude and training of the USAF and other branches as understood by a Marine Corps RPA operator.

⁷¹ Phelps, *On Killing Remotely*, 50.

⁷² *Ibid.*

have an on-sight commanding officer, but merely that they need not necessarily be in the same room or even the same country. “Those decisions –depending on how many people we think we’re going to kill –elevate up the chain of command. Some pilots receive a phone call from the president saying, ‘You’re authorized to strike that target.’”⁷³ Importantly, these authority figures are highly trusted by the crews to make the right decisions. The commander is supported by a group comprised of military intelligence personnel and military lawyers. These subject matter experts legitimize certain targets as lawful, moral and relevant. In a perfect system, the order to kill is vetted and checked by different people at different levels channeling the right information to the operators. Therefore, the demands of a Milgram authority are not merely the demands of a random unknown figure in an experiment, but rather a known and respected expert.⁷⁴ RPA operators have the added pressure to carry out the kill order of being video monitored by their superiors who can review the actions of their subordinates down to the keystroke log. At this level of scrutiny, there is little room for the resistance to authority by purposefully missing a target.

The RPA kill chain also acts to dilute the responsibility of a kill. Feeling responsible for taking another life can stop someone from carrying out their mission, especially if they feel there is moral ambiguity in the kill. Not only is a trusted authority figure authorizing the strike based on the intelligence analysis of a group of experts, but the responsibility for killing is itself split among two individuals. One person lazes the target to guide the missile. The missile itself is shot

⁷³ Anna Mulrine Grobe, “What’s combat like for a drone operator? Up close and personal.”

⁷⁴ In Dr. Milgram’s experiment, the authority figure was a generic authority figure and was able to get participants to go beyond their moral comfort level in inflicting pain and death. How much more powerful is a built-in and respected authority figure in convincing operators to kill through RPAs.

by another, higher ranking, individual. If the airman lazing the target fails to maintain proper target lock, then the shot fails. If the pilot refuses to pull the trigger, then the shot fails. This is an effective form of group absolution as every link is critical for killing the target, but each portion of the group can rationalize the kill by shifting blame to the other portions if need be.

Much like their conventional aircrew counterparts, members of the RPA community foster an intense feeling of responsibility toward ground forces. RPA aircraft have an incredible capacity to loiter over the battlefield. Their endurance is one key to their success. Operators can stay on-station long enough to “engage in lengthy communications with individuals on the ground,” where they build relationships with individuals on the ground. Daniel Rothenberg, an RPA pilot for the USAF, recalled “When you’re talking to that twenty-year-old with the rifle for twenty-plus hours at a time, maybe for weeks, you build a relationship. And with that, there’s an emotional attachment to those individuals... I have a buddy who was actually able to make contact with his son’s friend over in the AOR [area of responsibility].”⁷⁵ Many RPA operators have also relayed the experience of meeting men and women whom they had protected overseas. Rothenberg said, “Once, I met someone like that at a Little League baseball game. You just start talking about the geographical area and the time and then we pieced together that I was there and I was providing over-watch for the person while he was on the ground. And, he said, ‘Thank you.’...When you see a person who is at a baseball game now because you were doing your job, well, words cannot describe the feeling. It’s uplifting. Every day I leave work I feel a sense of accomplishment, a sense of pride.”⁷⁶ The emotional ties formed with those fighters on the ground

⁷⁵ Thomas Ricks, “Interview with a U.S. Air Force drone pilot: It is, oddly, war at a very intimate level.”

⁷⁶ Ibid.

become a catalyst to take action supporting those individuals. Killing a human is much easier when you are defending a friend or loved one.

Operating from physical safety divorces many emotional aspects of combat from the RPA crewmembers' experiences. Screens remove the operator from battlefield smells, sounds, and the fear of death. Conversely, those same screens amplify the sights other aircrew do not experience. This distorted view of combat provides a certain level where reality can be denied. The kill can be separated from the killer by means of that screen. Within the community's short operational stint in warfare, there is room for critical comparison because early interviews of RPA pilots differed from those conducted later. Modern RPA crewmembers chafed at the video game comparison so often leveled at them in the early 2000s. Yet, numerous interviewers asked, "How do you feel killing through the intermediary of a screen?" RPA pilots from across the US responded, "Oh, it's a gamer's delight" or "Almost like playing the computer game Civilization, in which you direct units and armies in battle" or even "It's like a video game. It can get a little bloodthirsty. But it's [expletive] cool."⁷⁷ These answers were off the cuff and early in the implementation of RPAs in combat. The early operators may have been pulled in with certain preconceived notions which helped them cope emotionally, dehumanizing their targets. The early technology may have also played a key factor. By 2012, when the same question was asked again, an exacerbated operator replied, "We are not just playing video games here."⁷⁸ Whether

⁷⁷ Chamayou, *A Theory of the Drone*, 107-110.

⁷⁸ Ibid.

coached to reply like that, or given training to humanize targets and make operators act more professionally, there is a noticeable shift in RPA battle culture.

An emotional phenomenon which can further aid in illuminating the shift or development of cultural norms in the RPA community is the eagerness on the part of men engaged in killing to “assume moral responsibility for their bloody deeds. As sentient humans, they insisted upon bearing a share of the responsibility for their own actions: blaming a higher authority was certainly appealing, but only superficially.”⁷⁹ If proximity to the victim increases the resistance to killing and the psychological and emotional trauma for the killer, then RPA crews find themselves in a unique position. They are beyond Grossman’s Max Range category where he placed bomber aircraft and over the horizon artillery. Yet, they witness the carnage of their work as though they were at Close Range.⁸⁰ The fidelity of a sensor operator’s camera is also improving. No longer is it the heat signature of a body on the screen, but sensor operators can make out facial features. Combine that with the ability to be on station for long periods of time before and after pulling the trigger and those operators have enough time for their targets to not only humanize, but become associated with people in the operator’s life. Witnessing the target take humanizing actions like those of a father, brother, friend, or community member moves the target out of the dehumanized ‘other’ and closer to the category of ‘one like me.’ This categorical shift increases the one-sided intimacy an operator can develop with their target making it that much more psychologically traumatic when the operator takes action to kill them.

⁷⁹ Bourke, *An Intimate History of Killing*, xx.

⁸⁰ “Close Range” refers to the distance one can typically kill using a pistol or rifle in Fig. 1.

2.5 RPA Crews and Distant Intimacy

Technological advancement has put greater distance between killers and victims. The mechanization of the twentieth century, and digitization of the twenty first, has amplified the capabilities of modern warfare to find and destroy relevant targets. By putting physical, emotional, and cognitive distance between the killer and the victim, technology makes it easier to kill. As a means of overcoming psychological barriers tied to intimacy, technology has long been utilized to provide a means to provide that disconnect for warriors. The less a combatant has to think about the action they are taking and the consequences of those actions, the more effective they are in combat. In antiquity, the introduction of the bow and arrow meant death could be launched from a point where men's faces were still obscure. Archers launched missiles into the air and their killing was made easier and safer than hacking away with an axe or sword. Psychologically, shapes of men crumpled and there was no need to feel the blade's transfer of flesh giving way to blow after blow. Extending the analogy to modern drones and soldiers, and the ability to kill becomes easier and safer than using a rifle. Key strokes have replaced pulling a bow string to loose missiles upon the enemy. Modern killing threatens to become almost routine.

Technology has progressed to the point where it enables some to participate in “numbed killing.”⁸¹ A former RPA sensor operator named Brandon Bryant described the detached feeling he had operating drones. He would spend days watching targets gathering intelligence on them. He was able to figure out their routines and see them interact with others in their community. He claimed that “the most shocking, I think, was when we were following someone and the guy

⁸¹ Bourke, *An Intimate History of Killing*, xvii.

stopped and pulled out two kids and executed them in the street and he knew that he had no consequences. The crew that got him later, it was like, vengeance, almost...we still have this level of intimacy where we see what we do and we see the actions that happened.” Bryant said that he “became numb and carried out the job in ‘zombie mode’” because of the evil he witnessed and number of times he participated in lethal ops. During his stint from 2006 to 2011 as a sensor operator, monitoring cameras and aiming the laser targeting system, the USAF credited him as being involved in killing 1,626 people. Few individuals outside the fantasy of the silver screen have had such a high body count. Yet, for this one man it was no fantasy. Bryant saw all of those individuals on a screen to be sure, but this was real life. Whether he was there for the kill or had merely been gathering intelligence on them, he witnessed the aftermath of strikes and conducted after action reports. In one, he watched a man, whom he had targeted with a laser, bleed out after a hellfire missile strike blew off his leg. The thermal imaging allowed Bryant to see spurts of hot blood, which show as white streaks on the screen, leave the man as he writhed on the cold ground for his last moments. “I watched him die on a pixelated screen; he bled out. It’s pixelized and it doesn’t really look real, but it was real and I think that was the most heartbreaking part for me.” The dissonance he felt, the surrealness of the experience, haunted Bryant. Bryant was one of the first to use RPAs to kill and was one of the first to speak on how it was affecting operators negatively. He ended up being diagnosed with PTSD from the psychological trauma he experienced.⁸²

⁸² This entire paragraph is derived from Jethro Mullen’s “Report: Former drone operator shares his inner torment” CNN Interview (2013). A portion is a live interview and another is in the form of a written report.

Bryant's dissonance is important as it confirms a conclusion made by Bourke that "technology still failed to render the dead completely faceless."⁸³ Bourke argued that bomber crews in the Second World War had "used their imagination to 'see' the impact of their weapons on other men, to construct elaborate, precise, and self-conscious fantasies about the effects of their destructive weapons, especially when the impact of their actions was beyond their immediate vision."⁸⁴ The imagination is a potent force. Watching the aftermath of strikes on a pixilated screen gave Bryant's victims greater purchase in his psyche as he was able to relate to individual suffering. Technology does not kill, but it facilitates human propensity for destruction through routine action. Though it may take time, the imagination will eventually reveal the reality of the killer's actions. Thus, the easier technology makes it to overcome the barriers for a person to kill, the greater the number of people who can be made to kill, and the greater the toll it takes on the killers' minds.

2.6 Intimacy Among "Shooters, Assisters and Watchers"

Various airframes are designed to fulfill certain roles in the air war. Lieutenant Colonel Wayne Phelps claims that the various combat roles of aircraft can be analogized to players in basketball. In basketball, there are "shooters, assisters and watchers. Shooters take the shot, assisters pass the shot off to someone else, and watchers are those players on the court who don't touch the ball but watch the shot go down."⁸⁵ Conventionally, fighter and bomber aircraft fall in the category of shooter or assister since they drop ordinance and are fitted with the capacity to

⁸³ Bourke, *An Intimate History of Killing*, xviii.

⁸⁴ Ibid.

⁸⁵ Phelps, *On Killing Remotely*, 113. He actually developed this analogy for RPAs, but I have adopted and expanded it to include conventional aircraft as well.

observe weapon strikes. Airborne support assets, such as refuelers or the E-3 AWACS (Airborne Warning and Control System), fall into the category of watchers since they are ‘on the court’ supporting their teammates, but do not handle or guide the bombs to target.

RPAs can be divided into the same three categories. Those large enough to carry weapons can be “used to kill directly from their own platform, such as Predators, Gray Eagles, and Reapers.”⁸⁶ Any RPA with an onboard laser designator can act as an assister marking targets to be destroyed by other shooters, RPA or conventional fighters or bombers, in the area. Watchers among the RPA airframes “find a target, call someone else to shoot it, and then report the aftermath of the strike, but do not mark a target with a laser or employ a weapon against it.”⁸⁷ Due to the distributed nature of the RPA kill chain, watchers also include any personnel who witness the strikes recorded by their onboard cameras. This includes intelligence analysts who help in deciphering the footage and us tanker pilots who are shown our part in the killing of another person during pre-mission briefings or post-mission debriefings.

Regardless of their basketball category, RPAs all conduct combat related duties. These “include identifying, tracking, targeting, and killing enemy combatants and destroying enemy assets, witnessing (via real-time video) the torture and death of civilian bystanders and U.S. military forces by enemy combatants, directing and protecting ground forces, safeguarding convoys, and surveying post-strike battle damage.”⁸⁸ Across each of these duties, and those not listed, operators are exposed to traumatic images whereby they witness the best and worst of

⁸⁶ Phelps, *On Killing Remotely*, 113.

⁸⁷ *Ibid.*

⁸⁸ *Ibid.*, 86.

mankind. Shooters and assisters, in particular, are able to directly witness the reality of their actions in the post-strike battle damage assessments they are required to conduct. During these interactions, RPA operators are exposed to a level of intimacy unheard of in modern war. They often witness the “grief reactions in friends and family of those killed, the observation of first responders recovering bodies and body parts, and witnessing mortuary and burial services. Such surveillance is often vivid and prolonged.”⁸⁹ Here operators not only experience their own emotions, but are able to see how their actions affect those who loved the deceased. Few other combatants experience this level of exposure to collateral emotional damage. It is a one-sided intimacy with shooter, assister, and watcher witnessing the human cost of war and experiencing its toll on their own psyche.

Watcher-type RPAs occupy a novel battlefield role and complicate the investigation into the intimacy and emotion of killing. The testimony of an operator named Brett Velicovich demonstrates how someone who does not pull the trigger still experiences many of the emotional reactions to killing felt by shooters and assisters. His job was to “gather intelligence and to tell those people [trigger pullers], ‘This is the person who needs to be captured,’ or ‘This is the man who needs to die today.’”⁹⁰ Velicovich said that he felt a heavy burden making the call of who lived and died as the moral and ethical considerations were not always clear. As an empathetic individual, he was loathe to take a human life. However, his sense of purpose overrode other considerations. He knew he “had to make these calls in a matter of days, or even hours. We couldn’t sit waiting. If we didn’t get him [the enemy] the same night, or follow him to try and

⁸⁹ Phelps, *On Killing Remotely*, 86.

⁹⁰ Jay Willis, “What Drone Warfare Does to a Soldier's Brain.”

unravel the network, we knew he was going to kill more innocent people.”⁹¹ Velicovich did not pull the trigger, but he saw himself as a watchdog protecting a flock. He experienced “a tremendous emotional high that comes from knowing that you’re protecting American soldiers.”⁹² He lost sleep worrying about his mission because self-pressure reinforced a feeling of responsibility toward the US soldiers and foreign civilians he tried to keep out of the crosshairs of terrorist forces. “I loved what I did. I have no regrets, really. The only regret I have is the fact that we didn’t kill more terrorists while I was there. A part of me still misses it, and misses having that sense of purpose.”⁹³

Velicovich’s lived experience reveals how the weapon system integrates itself into the operator’s life. He made it through the screening process, training, and went on to form an integral part in the kill chain. He took his job seriously and felt a deep sense of emotional connection and intimacy with the people he observed on the screen. His deepest emotional injuries came from atrocities he witnessed while finding targets. He recounted a time he was “tracking a particular ISIS leader, hoping he’d lead us to his superior. One day, we watched him put two small children in the backseat of his car and drive to the market, where he stopped the car and ducked into the store. We watched, thinking he was just going inside to grab something. Five minutes later, the car exploded. He left those children inside the car bomb so that the vehicle wouldn’t arouse suspicion. These are evil people, and I watched it every day.”⁹⁴ His experiences did not leave him with PTSD, but he did believe his mission had been more

⁹¹ Willis, “What Drone Warfare Does to a Soldier’s Brain.”

⁹² Ibid.

⁹³ Ibid.

⁹⁴ Ibid.

important than his own family or relationships with people around him. Velicovich's personal ethics had dictated that he would do his duty, no matter the personal cost. Even though he did not pay with his life, duty called him to sacrifice much.

Despite the use of screens, killing with an RPA is not a video game. It is a very real and visceral experience. Dr. Lee noted that "different people react differently when you're about to kill someone. There is an adrenaline spike, nausea, cold sweat. It's not just your mind, your body reacts. If you are having these reactions, you are not detached. Some people, after a number of strikes, do not get such strong physical reactions – some reaction, but not as strong. Others get as intense a reaction as the first time. For others the physical reaction gets worse over time."⁹⁵ Those who reacted negatively to killing seemed to have a higher capacity for empathy or were more emotional in general. In analyzing the transcripts of the interviews, everyone reacted differently to operating the RPA. Many experienced similar emotions to one another, ranging from Jake's inability to continue operations to others who were proud of the killing and wish they had been able to do more of it. One thing all the RPA operators from this study have in common is that they were fundamentally changed by their experience flying drones. The fact that there were physiological responses to mental stimuli prove that RPAs are tools like swords, bows, rifles, or conventional aircraft. They aid humans in killing other humans.

If intimacy is concerned with getting to know another person on a human level, then modern warfare, especially as expressed through RPAs, is increasing experienced-intimacy

⁹⁵ Chris Cole, "'Here's Their Actual Stories, Make of Them What You Will.' Dr Peter Lee on 'Britain's Reaper Force.'"

through a new form of combat. Yet, this is a one-sided intimacy. Drone technology allows for an RPA operator to spy on other humans and learn intimate details of their lives. Those same drones prevent the spied upon to learn anything of their spy. In that sense, drones cut off true intimacy. In other forms, combat allows for real intimacy as two individuals can face off and learn how one another acts in an extreme circumstance. Stripped of all pretense, the real person is revealed as they struggle for survival when their core values dictate their actions and reactions. The two combatants feel each other's rage and smell the fear through sweat and other excretions. They can experience the honor of a withheld blow or the savagery of a cheap shot. An RPA's unmanned nature prevents this level intimate exchange. Instead, RPAs offer a novel look at the home front humanity of those spied upon. For the first time in history, geographically removed home fronts are linked through battle front means and the one-sided intimacy of RPA operators is raising serious concerns about the ethics of this new form of warfare.

Chapter 3 Ethics, Culture and Artificial Intelligence

3.1 The Ethics of Drone Warfare

In a broad survey of the experiences of British and American RPA pilots, Dr. Peter Lee concluded that emotions play a key role in their ethical calculations. For many of these men and women, the question of military ethics came down to weighing potential outcomes, “what’s the least bad choice here.” Killing the target could prevent immediate bloodshed, but allow greater suffering later as the organization adapts its operations to thwart RPA operations. If the RPA operator chooses instead to allow the target to live then other people may have to die while the drone tracks the target in order to uncover a larger network. This could preserve a greater number of lives in the long run at the expense of those few now. Thus, deciding whether or not to pull the trigger is an ethical calculation complicated by feelings of intimacy developed by the RPA operator toward their targets. Often any real choices are suboptimal. Lives lost or saved because of an operator’s decision will have an immense impact on their emotional state. Dr. Lee interviewed an RPA pilot who struggled with this sort of dilemma; he simply referred to him as Jake. Jake, a “deeply intelligent and very highly empathetic” individual admitted, “No, I can’t cope with pulling the trigger.”⁹⁶ He would watch “individuals for days and see them killed and then watch the impact on family members.”⁹⁷ He struggled with taking human life because of the value he placed on it. The screen allowed him to identify his target as people like himself rather than a dehumanized ‘other.’ Jake opted to remove himself from the combat ready list in order to seek guidance from psychologists and chaplains over his internal turmoil. Killing was violating

⁹⁶ Cole, “Here’s their actual stories, make of them what you will.”

⁹⁷ Ibid.

this man's core values and his commanders were sympathetic to his plight. As Jake worked through personal ethical calculations, his unit changed from operations in Afghanistan to operations against ISIS. Jake witnessed the atrocities of ISIS, which were wholly different than what had been going on in Afghanistan, and decided "these people deserve to die."⁹⁸ ISIS actions had removed ambiguity from Jake's ethical calculation and convinced him that pulling the trigger was worth the emotional strain. For many operators, emotional outrage played a powerful role in tipping their ethical calculations toward killing ISIS militants. Whether it was witnessing ISIS use children as shields, set people on fire, rape women in the open, slit the throats of religious minorities, or ambush coalition forces, there was a sense of injustice at their conduct which helped galvanize the desire of hesitant RPA operators to pull the trigger.⁹⁹

In addition to problems in personal ethics regarding RPA operations, there is a paradigm shift occurring within the official ethics guiding the military. Technological advances can often drive these sorts of changes which many who are established in the old-ethic find difficult to accept. Part of the shift is recognized by the rhetoric declaring the West has entered an "age of 'virtueless war,' a 'post-heroic age.'"¹⁰⁰ One side can dominate the battlefield to such an extent that it need not put any of its own warriors in danger. The old "ethic of self-sacrifice and courage" is being replaced by "one of self-preservation and more or less assumed cowardice."¹⁰¹ The ability to kill an enemy without being in danger of dying is a new level of empowerment. Anyone who has ever had to stare death in the eye may find this situation appealing. Yet even

⁹⁸ Cole, "Here's their actual stories, make of them what you will."

⁹⁹ Ibid.

¹⁰⁰ Chamayou, *A Theory of the Drone*, 101.

¹⁰¹ Ibid.

some of these may argue that there are certain moral character traits worth dying for. It can be difficult to reconcile the feeling of guilt from having the power of life and death over your enemy without their ever being able to reach out and smite you. There is no fairness, honor, or valor in that sort of power relationship, but there is self-preservation and a new level of combat effectiveness. The new ethic seems more like assassination than warfare. “Colonel Eric Mathewson, a drone pilot emeritus, offered his own personal interpretation of the notion. ‘Valor is doing what is right. Valor is about your motivations and the ends that you seek. It is doing what is right for the right reasons. That, to me, is valor.’”¹⁰² Colonel Mathewson’s Orwellian word play seems to suggest that the best way to rationalize RPA operations is to claim the ends justify the means so long as intentions are pure. His defense implicitly discards the ethic which assumes “the traditional bargain among warriors who are moral equals is that the licence to kill may be exercised only by someone who is prepared to die.”¹⁰³ Beyond an Orwellian twisting of words, the military cites drone operator experiences of psychic trauma through “high levels of stress and PTSD” as a refutation that these operators are completely safe.¹⁰⁴ This equivocation of the mental with the physical may go beyond what is bound up in the concept of combat with an enemy. By claiming that RPA crews were vulnerable to psychological wounding the USAF launched a campaign to legitimate their use of a strategically effective weapon system. To be sure, RPA crewmembers do suffer psychological trauma as a result of their actions.¹⁰⁵ The

¹⁰² Chamayou, *A Theory of the Drone*, 102.

¹⁰³ Christian Enemark, *Armed Drones and the Ethics of War: Military Virtue in a Post-Heroic Age*, 116. Original British spelling used.

¹⁰⁴ Chamayou, *A Theory of the Drone*, 103.

¹⁰⁵ Chappelle et. al., “Combat and Operational Risk Factors for Post-Traumatic Stress Disorder Symptom Criteria among United States Air Force Remotely Piloted Aircraft “Drone” Warfighters,” 87.

question remains whether or not their trauma is enough to warrant their inclusion as warriors or if they remain assassins.

3.2 Artificial Intelligence to the Rescue?

Based on the trajectory of developing technology, AI promises to revolutionize warfare similar to the advent of the nuclear age. Computer programming is projected to be able to bypass the psychological barriers that humans have to killing. Human psychological barriers overcome by demands of authority, group absolution, emotional distance, target relevance, and aggressive predisposition are irrelevant to a machine. It is conceivable that AI would not need human input for targeting and killing humans, which is why so many applied military history discourses surrounding AI are leery of its implementation. If remotely manned RPAs raise moral and ethical questions about assassins masquerading as warriors, then AI threatens assassination by computer program. Barriers would have to be programmed in such a way to ensure that AI could not manipulate human operators, if required, to comply with the kill order. The point is not to invoke *I, Robot*, the *Terminator*, or other science fiction horrors. Rather, the point is to ensure that when AI comes online that a human be integrated throughout the programmable kill chain. Ethical considerations demand that a human be the one to kill another human if nations go to war, regardless of the tool used to do so. Otherwise, the world is in jeopardy of totalitarian control through a technocracy capable of concentrating power into the hands of the few or the one.

3.3 The Implications of the Concentration of Intimacy

As RPA operations become more popular among military and political leadership, fewer individuals are saddled with the requirements of killing in combat than at any other time in history. Combat intimacy is being concentrated into a smaller portion of the overall fighting

force, while remaining military personnel are tasked with support functions.¹⁰⁶ The mechanization of military forces throughout the twentieth century resulted in this lopsided tooth-to-tail ratio. In the First World War, there were eight support personnel for every one man fighting on the front. By the Second World War, that number had swelled to twelve personnel for every one man in combat. The American military of the twenty-first century is about one-tenth the size of the American military of the Second World War, yet has far more capability. These numbers also change depending on service. The USAF has always had a higher ‘tooth-to-tail’ ratio of support personnel to trigger pullers. As of 2015, the unclassified numbers for USAF show that 287,000 personnel supported 20,300 war fighters. This produces a support-to-warfighter ratio of 14:1. This ratio might still be unable to reveal the full nature of the concentration of intimacy. If the total number of war fighters includes all pilots who fly combat missions, then there would need to be a paring down. For example, tanker pilots log combat missions for flying in combat zones and supporting combat operations, but we never pull triggers. Even if the number accurately reflects only those pulling triggers, the argument for the trend of the concentration for intimacy as warfare modernizes remains unchanged.

The concentration of combat intimacy is causing RPA operators to experience psychological trauma in an increasingly independent manner as fewer of their compatriots

¹⁰⁶ Rachel Nussbaum, “Changing the Tooth-to-Tail Ratio Using Robotics and Automation to Beat Sequestration,” 76. Additionally, in Bourke’s *An Intimate History of Killing*, page xvii, she summarizes the tooth-to-tail ratio for all American fighting forces in several conflicts. During the First World War, the ratio was 8:1, by the Second World War the ratio was 12:1. In Vietnam the ratio returned to nearly 8:1. She makes a note that “the ratio of combatants to service personnel was even lower in particular branches of the armed forces, such as the air force,” since technology had mechanized the killing process even more there.

understand what they are going through.¹⁰⁷ The field is critically undermanned and based in isolated locations. There are no post-mission beers with the crew or a wingman after a sortie like conventional pilots have down range. There is merely a shift change and mission handoff. After killing a human being, RPA operators get in their car and drive an hour to get home. This means there is less of an opportunity for them to talk to someone about their experiences, which are often classified. Instead of fighting in distant lands and having a long journey home to decompress, modern warriors tele-fight in perpetual conflict. Many RPA operators I have talked to told me how their entire previous assignment had been spent conducting combat operations. Typical assignment cycles can last three or four years. That is a long time to tele-fight. One commander was interviewed concerning this isolated and stressful circumstance surrounding RPA operations. He claimed that “on four or five occasions, sensor operators have sought out a chaplain or supervisor after an attack...[but] he emphasized that the number of such cases is very small compared to the number of people involved in Predator operations.”¹⁰⁸ While it is certain that most members are proud of their contributions to the fight and saving the lives of other Americans, it is at least possible that many operators are following standard military protocol and suffering in silence.

3.4 Cultural Shifts with Technology

The nature of RPA warfare requires confronting the ethical dilemma of disembodiment and the way military culture is shifting to adapt to powerful weapon systems. Just War Theory and the resultant “ethical rules of war derive largely ‘from our sense of physical embodiment’

¹⁰⁷ Lindlaw, “Remote-Control Warriors Suffer War Stress.”

¹⁰⁸ Ibid.

which in turn gives us ‘our sense of agency and responsibility for our actions.’”¹⁰⁹ The unique moral status of a warrior comes from their willingness to lay down their lives for their country. This is one of the primary differentiations in international relations that legally sets militaries apart from mercenary groups or organized criminal bands. So “when a drone operator’s mind alone goes to war while his or her body remains at home, he or she manifests as a ‘disembodied warrior.’”¹¹⁰ The very concept of disembodied warrior seems to be a paradox. A similar ethical problem can be seen in the rise of the internet hunting. There have been numerous attempts to allow individuals the ability to hunt animals for meat or sport online. Simply purchase a session with a credit card and use a camera to direct a gun or bow to shoot an animal. Since there is no danger to the hunter, online hunting has been routinely and roundly condemned as being unsporting and unfair to the animals. Conventional hunters are the most vocal in condemning the practice, even though it opens the hunt up to individuals whose physical infirmities would otherwise have prevented them from partaking. To hunters, the moral consequences are not offset by any economic or politically inclusive gains made through the marriage of the internet, cameras, key strokes, and shots fired. “If the risk-free (online) killing of a non-human can be deemed objectionable, it is reasonable to suggest that remote-control killing of humans might be objectionable too.”¹¹¹ As conventional hunters are the most vocal opposition to online hunting, the old-guard of military members committed to a legacy ethic were, and still are, the most vocal critics of RPAs. The removal of combatants from the risk and fear of the battlefield through

¹⁰⁹ Enemark, *Armed Drones and the Ethics of War*, 85.

¹¹⁰ *Ibid.*

¹¹¹ *Ibid.*, 84.

unmanned systems has provided the “first complete break in the ancient connection that defines warriors and their soldierly values.”¹¹²

Despite critics, disembodied warriors are the future drivers of combat operations and society is beginning to accept that fact. The increasing utilization of RPAs reveals a cultural shift, both in the military and American society at large. When RPA use was first publicized, the technology was hailed as visionary by its proponents but denigrated by the military old-guard and American public. The main question of the time concerning RPAs was whether “young military personnel, ‘raised on a diet of video games’ and ‘removed from the human consequences of their actions’, will ‘value the right to life.’”¹¹³ The media asked if there was risk of a “PlayStation mentality to killing.”¹¹⁴ Neither the American military nor society at large knew what to do with the claims that veterans were experiencing combat stress and PTSD. In fact, “American soldiers did not hesitate to vent their scorn and anger toward the drone pilots and their supposed trauma.”¹¹⁵ Society did not treat these operators with respect. RPA operators consistently had their lethal work compared to playing video games. It took nearly a decade to recognize the reality of the psychological issues facing RPA operators. This recognition was reflected when the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* was finally updated with a broader definition of PTSD. The new version recognized a category of trauma it dubs “screen trauma” or “mediated trauma” so long as “exposure to aversive details of the

¹¹² Enemark, *Armed Drones and the Ethics of War*, 86.

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ Phelps, *On Remote Killing*, 106.

trauma” occurred “in the course of professional duties.”¹¹⁶ This clinical recognition of the power of screens to convey trauma was a major change from the “DSM-IV-TR, which did not include indirect exposure to an event as a criterion for PTSD.”¹¹⁷ An official change to the DSM reflects changing attitudes in the military and American society. This should not be surprising since Americans have been quick to adapt to, and accept, many new facets of electronic life including social media, telework, and even online school. If it is possible to work from home or receive an online education at home, then it is not too much of a stretch for society to accept that its soldiers can kill from just down the road from home.

It has taken some time, but society has begun to accept what RPA operators have been telling them. Ironically, video games themselves may be helping bridge the conceptual gap. Many Americans are playing immersive video games, like a first-person shooter or dogfight simulator, that mimic realistic experiences.¹¹⁸ Social media and streaming are also stitching the physical and digital worlds together at an increased pace. Americans are increasingly able to relate to the concept that a screen can transfer trauma and that there is a real difference between reality and the world of video games. Again, it is important to stress that operating an RPA is as much like playing a video game as being an infantry soldier can be likened to a first-person shooter. Emotional trauma experienced by RPA operators offers evidence that the mind is able to

¹¹⁶ Phelps, *On Remote Killing*, 116. For clinical discussion of PTSD see *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. Pg 271-280.

¹¹⁷ Ibid, 117.

¹¹⁸ Many “first person shooter” video games attempt to place individuals in famous battles in famous American wars, but is increasingly branching out into a hybrid fantasy dystopian future outlook. Flight simulators and games allow gamers to take controls of aircraft, often allowing the fidelity of enabling individual levers, buttons, throttles, and circuit breakers in the virtual cockpit to work when toggled. It all depends on the key stroke of the computer or console controller.

separate out reality from fantasy rather efficiently. Trauma also shows that the RPA community is truly suffering to a degree worth discussing.

The USAF recognized the importance of mental health and emotional support for its operators after issues started coming to light. The organization has a vested interest in keeping experienced operators around, especially after they have received highly specialized and expensive training. When operators started experiencing problems, the USAF adapted and implemented programs to provide support for those who needed it. This demonstrates a shift away from the military cultural maxim to suffer in silence. This shows a real change in military culture which had a remarkable effect. The USAF has “by far the best participation in post-killing discussions with a mental health professional or chaplain with 44 percent of participants...stating that they had talked to someone post-strike as opposed to 5 percent for the Army and Marine Corps.”¹¹⁹ The USAF has taken an important first step in addressing the mental and emotional health issues facing modern disembodied warriors. In an all-volunteer force that attracts a certain kind of individual, few military personnel actually want to open up about problems they are facing. We feel we ought to be able to handle it, after all, “we signed up for this.” Feelings of inadequacy aside, many view asking for help or even admitting that they may need help to be a sign of weakness. The fear of looking weak may very well be ubiquitous for warriors across time, space, or culture and long required to be among those who survived. Military culture is passed on over the generations and dedicated to combat efficiency. It is loath to tolerate any attitude which will get people killed. Therefore, it is further evidence of a shift in

¹¹⁹ Phelps, *On Killing Remotely*, 142.

military culture occurring in the RPA community when its members are willing to admit when something is wrong. In one survey of 254 RPA operators across the US, 243 claimed to have used their platform to directly or indirectly kill another human being. Of those 243, “ninety-five (37-percent of the total respondents regardless of role) answered either ‘yes’ or ‘maybe’ to experiencing trauma.”¹²⁰ Even admitting to experiencing trauma ten years ago would likely have initiated a command driven assessment of fitness to continue in a job officially or unofficially. Now, it is a sign of wisdom and strength to admit when things are not okay. It is now recognized as a military efficiency to discuss problems early before they can fester and become a detriment to combat effectiveness from an over-stressed individual.

There are two other factors working against the USAF’s efforts to care for its force. The first is a shift toward effects-based doctrine. The other is an exponential increase on the demand for RPA capabilities to achieve American foreign policy objectives. The effects-based doctrine is a great way to make an efficient force during budgetary crises as it focuses on results rather than sheer numbers or green painted grass.¹²¹ The effects brought about by RPAs are potent and run little political cost for American politicians. Unmanned vehicles do not risk the physical lives of American servicemen and women and their loss does not often initiate a flood of letters or phone calls from distressed constituents. Combined with increased demand, RPA operators are increasingly stretched thin. They are overworked and undermanned. Regardless of the emotional

¹²⁰ Phelps, *On Killing Remotely*, 113-116.

¹²¹ During portions of the Cold War era, there was the tendency for bases to prepare for higher headquarters inspections by painting their grass green to ‘keep up appearances’. Lawn color was a metric some generals believed measured attention to detail. The logic was that if the grass was well taken care of, then so was the rest of the base and the mission. Instead, base commanders decided to shortcut the test using paint.

toll taken by killing another human being, the small stresses of everyday life can also accumulate to the point of breaking many individuals. “For the MQ-9 [Reaper] squadron, breaks from this schedule are virtually non-existent. There are no three-day weekends, holidays, or other standard ‘days off.’”¹²² US Air Force RPAs operate in a manner utterly unique in the modern military. Other communities deploy for combat operations and return home to regroup and train before deploying again in a multi-year cycle. Operating from locations in the US means that RPAs are treated like they are deployed in garrison. They have all the responsibilities of deployment and combat operations, but few of its privileges. “No other community conducts combat operations for five, six, or even seven straight years. Other military units sprint, rest, then sprint again. No one keeps sprinting for years at a time — except the Air Force’s remotely piloted aircraft community.”¹²³

An unrelenting work pace compounds many emotional factors present in the RPA community. Nearly fifty-percent of RPA crewmembers reported “experiencing job impacting chronic fatigue from understaffing and lack of recovery time after frequent shift changes.”¹²⁴ In order to maintain effectiveness, the USAF has shifted an emphasis in the values it desires in RPA operators. “Physical courage, the basis for air crew ethos since the First World War, has been replaced with an emphasis on moral courage and mental endurance.”¹²⁵ This shift in values may explain why the new breed of disembodied warriors see combat differently from the old-guard and are quick to embrace a new combat ethic. The shift in values has also ensured short term

¹²² Johnny Duray, “Forever Deployed: Why ‘Combat-to-Dwell’ Reform for MQ-9 Crews is Beyond Overdue.”

¹²³ Ibid.

¹²⁴ Dan Gettinger, “Burdens of War: PTSD and Drone Crews.”

¹²⁵ Ibid.

gains for the USAF, but at a different sort of cost than traditional physical life. Crews in the Global Hawk community “were found to have higher emotional exhaustion (33%), cynicism (20.8%), and low professional efficacy (4.6%) than the crews of their armed counterparts.”¹²⁶ This creates a vicious cycle whereby work stress is brought home impacting the RPA operator’s personal life. As the personal life deteriorates, these members lose the support of loved ones they rely on to handle work stresses, which become more difficult to bear alone. RPA warfare impacts the combatant’s own intimacy with loved ones on the home front. Moral injuries and emotional trauma are compounded by the accumulation of total-life stressors. Instead of suffering physical injuries on the battlefield, the war comes home and moral injuries shift the damage from a mere medical issue to a social one.

3.5 Artificial Intelligence Will Change Culture Again

Artificial Intelligence is emerging rapidly and society’s capacity to understand its ramifications is not keeping pace. In similar fashion to the internet, AI will inevitably lead to massive shifts in society and culture. Narrow AI already aids humans in the exploration and exploitation of extreme environments. Oceanographers use robust autonomous submersibles to explore areas of the ocean which are otherwise unreachable in manned vehicles. AI driven exploration is expanding our knowledge of the earth’s oceans. We have also been using AI to explore our solar system and the space beyond. In these non-combat extreme environments, there exists an established old-guard of oceanographers and astronauts who oppose the use of AI operated autonomous robots for exploration. They argue that “physical human presence is the

¹²⁶ Gettinger, “Burdens of War: PTSD and Drone Crews.”

essence of exploration.”¹²⁷ Their objections are similar in character to those coming from the military and speak to the ways human identity is tied to work. People are afraid of being replaced.

Though it may be difficult for an oceanographer, astronaut, or pilot to be replaced by an AI driven robot, it will inevitably lead to increased knowledge, efficiency, and understanding of our world. Humans will still be necessary to interpret the data collected and implement it for the betterment of mankind. Technological advancement often topples the reigning paradigm ultimately benefitting society at large. The discovery of crude oil obsoleted the need for the whaling industry. Ride share apps obsoleted the need for taxi services and many companies went bankrupt. AI will make some current services and industries obsolete while transforming many others. If it follows historical precedent, it will create entirely new industries and modes of life.

The military’s adoption of AI promises to change military culture and how future warriors will interact with one another. The reigning paradigm will shift again just as it always does with new technology. Much like RPAs inverted certain military ethics, AI could shift ethics once again. It is conceivable that AI will be so efficient at achieving certain effects-based outcomes that it could be designed to bypass human decision makers. Those human emotions which proved to be problematic for achieving certain military results could be avoided and deemed outmoded. AI powered weapons would enable killing to be further concentrated down to certain individuals resulting in a similar crisis for AI warriors as happened over the past twenty years with RPA operators. Whatever the new military culture will be like, humans must be the

¹²⁷ David Mindell, *Our Robots, Ourselves*, 222.

ones making ethical choices to decide who lives or dies. Our emotions are an invaluable component of warfare. Technology cannot replace humanity.

Emotions are necessary for ethical judgment because “one who could not feel compassion for the sufferings of others might not be capable of making good moral decisions.”¹²⁸ Ethical judgment is tied to experienced emotions in an infinitely complex way. “It is the nature of ethics and laws that they are inherently unprogrammable,” and therefore AI could never understand the nuance of making a decision to kill or staying the hand.¹²⁹ Every kill is situationally dependent. Humans may get it wrong, but then a person can still be held accountable. The human capacity to empathize with an enemy, especially to the point where individuals refuse orders which violate a moral code, is a powerful check on detached authoritative demands. Machines do what they were programmed to do. Machines and AI also provide too great an opportunity for the realization of *The Republic’s* fable concerning Gyges to become reality.¹³⁰ AI will grant a form of invisibility to its programmer and the one who wields it against their enemies.

The fable of Gyges’ Ring touches on an aspect of human nature that is difficult to discuss, but it needs to be addressed because of the nature of AI and the power it can potentially confer. A historical study of killing, emotion and intimacy decisively proves that certain people seek out

¹²⁸ Enemark, *Armed Drones and the Ethics of War*, 109.

¹²⁹ *Ibid*, 110.

¹³⁰ The Ring of Gyges parable is used in several applied military histories as a warning against improper AI implementation. Basically, with a ring of invisibility, a mere shepherd gained invulnerability and was able to scheme and murder his way to seize the throne of the land. He decided acting unjustly paid better than acting justly and used the dark power of atrocity to advance himself. His evil heart manifested itself with impunity. See specific discussions in Chamayou’s *A Theory of the Drone* on page 96, and Enemark’s *Armed Drones and the Ethics of War* on page 112 for more.

and enjoy evil actions. There is a dark power in atrocity which generates an overwhelming urge to exchange long term contentment and satisfaction for short term gratification. Most people who form polite society would rather dismiss the existence of atrocity as an aberration committed by individuals who can be labeled as lunatics. They can only rationalize atrocity by calling it senseless violence and attributing it to someone's 'otherness'. However, there is nothing senseless about atrocity.¹³¹ Participating in atrocity provides a strange empowerment which some people find very attractive. Most humans are not prepared to face the brute fact of human savagery and depravity and freeze in disbelief. Others succumb to its siren call. Those who join in atrocities, from gang rape to mass killing or any of a number of evil actions, form bonds with other participants and leaders forged in guilt. The desire to hide their actions from the uninitiated strengthens the bonds of a newly formed dark brotherhood. The refusal by decent people to believe humans can commit such evil inadvertently helps hide the evil. "The sheer awfulness of atrocity makes us wish it away" as evidenced by those who deny the Holocaust or Soviet Marxist oppression. Those who reject the reality of atrocity "are mainly good, decent, highly educated men and women. It is their very goodness and decency that cause them to be so completely incapable of believing that someone or something they approve of could be so completely evil."¹³²

When AI is finally approved for military use, beyond the narrow AI that navigates aircraft or powers communication devices, its programmers must consider the ethical elements of warfare. They must also be willing to face the dark side of human nature in order to ensure that

¹³¹ Grossman, *On Killing*, 209.

¹³² *Ibid*, 212.

the tool does not enable or amplify the dark power of atrocity. The most effective means of accomplishing an ethical implementation of AI is to leave human beings embedded at numerous points throughout the kill-chain. The removal of humans could streamline the process and enable a more efficient effects-based outcome, but at a human cost higher than anyone can pay.

Chapter 4 Conclusion: War is Killing and Killing is Intimate

4.1 Killing and Sex: Intimate Associates

American military personnel come from every stratum of society. RPA operators and remote killing offer a unique opportunity to understand how any one of us would act given the proper training, authoritative demands, and military relevance of a target, so long as we understand our own capacity for aggression. The two most intimate acts all humans can undertake are those of sexual intercourse and killing. In fact, the two are not unrelated. Sex creates life and killing ends it. Killing in combat can be understood as the “male equivalent of childbirth: it was the ‘initiation into the power of life and death.’”¹³³ The power and thrill of killing elicits similar feelings as a “spiritual enlightenment or sexual eroticism...an orgasmic, charismatic experience.”¹³⁴ Both killing and sex allow participants to know and be known by one another. RPAs have fundamentally altered this relationship and some operators consider themselves to be “professional voyeurs” because of their strange one-sided intimacy with their targets.¹³⁵

Voyeurism may be the most accurate label for this new form of warfare; this one-sided intimacy that can leave some adherents feeling dirty, guilty, or shameful. Sometimes it is not even the direct, or indirect, actions taken that cause these feelings. Merely being required to watch someone else’s depravity can conjure unwanted feelings. RPA operators are shooting,

¹³³ Bourke, *An Intimate History of Killing*, 2. Grossman also discusses this phenomenon in *On Killing*, 134-140.

¹³⁴ Bourke, *An Intimate History of Killing*, 3.

¹³⁵ Phelps, *On Killing Remotely*, 268. Taken in context, the author was not implying that RPA operators were sexually aroused by watching what they did. This analogy is merely meant to convey the moral and emotional dilemma of one-sided intimacy.

assisting, and watching through the intermediary of a screen. Unlike a soldier on the ground, RPA operators do not have the opportunity to share their emotional reactions with their subject. Emotions and intimacy are merely products of observance to be experienced in isolation. In one instance, a crew related that “observing the performance of sexual acts is just part of the job, particularly in the parts of the world where people sleep on their rooftop.”¹³⁶ Operators have witnessed every conceivable sexual act from masturbation to bestiality.¹³⁷ The voyeuristic nature of the RPA community is not limited to witnessing sexual acts. A Captain in the USAF said that “on a few occasions, I’ve had to watch an execution and not been able to do anything about it due to either collateral damage concerns or not having enough information on the situation to discern enemy combatants.”¹³⁸ RPAs impact service members beyond their immediate operation. Intelligence analysts dissect the videos captured by RPAs and witness the worst humanity has to offer. “Some airmen reported witnessing more than 100 incidents of rape or torture.”¹³⁹ RPAs provide a window into the life of the observed in unprecedented ways. Professional voyeurs are exposed to shocking sexual and violent acts on a daily basis, far beyond any other civil or military profession. Their experiences and emotional responses reveal the intimate ways operators are being touched by what they see.

¹³⁶ Phelps, *On Killing Remotely*, 268.

¹³⁷ Ibid. After being ordered to perform the “useless task of looking for signs of disturbed earth or hot spots or to report back anything unusual” a pilot quipped, “In a land where sex with animals occurs so frequently that it’s considered ‘usual,’ you have to wonder what would be considered unusual.”

¹³⁸ Ibid, 265.

¹³⁹ Ibid.

4.2 Trauma and Dark Humor

The emotional trauma experienced by RPA operators reveals how truly intimate certain experiences are despite being disembodied. The level of trauma can be indicative of the depth to which warfare touches individual operators. Certain acts will distress individuals more than others revealing their core values. For instance, a Technical Sergeant (E-6) in the USAF testified that what agonized his soul had been “watching the son of the person I just obliterated with a Hellfire missile pick up the pieces of his father. It wasn’t the act of killing that I focus on, it was watching the boy’s face and interactions with the rest of his family that continue to haunt me.”¹⁴⁰ This MQ-9 sensor operator is a professional airman who was trained to kill. It is reasonable to assume that he believes there are legitimate reasons to end another human being’s life, but he still values that life and the familial connections his victim had. This operator killed his enemy, but still related to the victims on a human level. He did not see them as merely ‘other’.

Trauma is not the only means of deciphering emotional intimacy. Dark humor, which can seem heartless or unprofessional to the uninitiated, is an integral part of the intimacy of war. It is a psychological defense to the terror, chaos, and uncertainty that can otherwise drive an individual crazy. “Laughter truly is the best medicine and dark humor is how the warrior administers it.”¹⁴¹ Laughter provides a means of dealing with turmoil and preventing it from gaining a grip on the individual. This could explain why my aircraft commander referred to the individuals who had escaped the strike as ‘squirters.’ She may have been grappling with the emotional trauma of helping take life. She relied on a defensive mechanism, that we all come to

¹⁴⁰ Phelps, *On Killing Remotely*, 266.

¹⁴¹ *Ibid*, 269.

embrace in our own way, to rationalize and deal with real psychological hurt. It is also fitting that we watched these humans on videos recorded by RPAs.

4.3 Could Artificial Intelligence Increase Battlefield Intimacy?

Before the actual implementation of RPAs by the US military, theorists prophesied that unmanned warfare would lead to a detached and inhuman calculus concerning killing. They claimed that operators of drones would not understand the reality of their actions and would become psychopathic killers; they would be enabled to kill without remorse, feeling, or moral comprehension of their actions.¹⁴² In reality, we know now that RPAs did little to diminish intimacy or blunt the emotional response operators felt to killing another human. Dr. Lee's work demonstrates how visceral the experience still is for operators. Even years after their first kill, some "get as an intense reaction as the first time."¹⁴³ Reality proves the prophets to be false. Intimacy was not diminished or banished; it changed its form. RPA implementation altered the intimate interactions operators were able to have with their enemies. For the first time, warriors of one military were able to observe their enemy's home front routines and interactions with families, friends, and community members. RPAs also changed the nature of the relationship between their operators and friendly personnel on the ground. The ability to loiter over the battlespace allowed individual pilots and sensor operators to develop relationships with individual soldiers and marines in ways conventional pilots rarely could. RPAs also impacted the intimacy operators experienced with their own families, friends, and communities on the home

¹⁴² Ricks, "Interview with a U.S. Air Force drone pilot: It is, oddly, war at a very intimate level."

¹⁴³ Cole, "Here's their actual stories, make of them what you will."

front. Drone technology closed off the intimacy experienced by face-to-face combat, but it opened new and unexpected avenues for intimacy to be experienced in war.

Similar to the false prophets of RPA implementation, AI detractors warn of the potential abuses of the technology if it is implemented. The fear of many is that AI will make killing too easy and that those in power will not hesitate to wield their power with impunity. It is especially frightening to consider a scenario involving the rise to power of someone who is tainted by the dark power of atrocity and hides behind the veil of plausible deniability inherent in computer programming. “Human Rights Watch has argued that the availability of autonomous robot warriors would ‘make it easier for political leaders to resort to force since their own troops would not face death or injury.’”¹⁴⁴ It is impossible to program a machine to the point where it understands the nature of ethics or moral law because they are too complex to put into coding. Emotions enable human beings to understand ethical considerations and moral reality since the capacity to empathize with suffering is the basis for sound moral judgment. Autonomous AI would be able to bypass the barriers humans face dealing with emotion and intimacy enabling it to kill without hesitation in fulfilment of inevitably flawed programming.

Utilitarian advocates of AI implementation argue that the technology would have the capacity to “reduce the societal costs of warfare,” thereby making AI an ethical necessity.¹⁴⁵ There would be less collateral damage, fewer friendly soldiers in harm’s way, and less destruction done to infrastructure if AI decides who to kill and when. However, far from making

¹⁴⁴ Enemark, *Armed Drones and the Ethics of War*, 111.

¹⁴⁵ Krishnan, *Killer Robots*, 119.

warfare less intimate, it is possible that AI would be developed to actually increase the intimacy of warfare. It would shift that intimacy to new frontiers in much the same way that RPAs shifted battlefield intimacy by creating new relationships between killers and victims. Increasing intimacy may reduce inhuman action and prevent the dark power of atrocity from taking hold of those in power much as RPA surveillance of both target and crew can reign in emotionally driven revenge. If humans are left in the kill chain and AI can be integrated to the point where it can reduce suffering as much as utilitarians hope, then the future of war through AI could be increasingly intimate.

One way AI could conceivably change intimacy is the power of creating a digital double. The technology exists to mirror every action and interaction of a person in a digital space. When this is tracked and filtered by AI, the computer can create a digital copy of a person. After millions or even billions of humans are profiled, AI can then use predictive algorithms to anticipate future action. A shadow of this possible future is already occurring where conversations about certain desires in the presence of smart devices cues companies to direct specific ads toward the user. The narrow AI designed for marketing is aiding companies to effectively advertise their products to those most interested in making a purchase. Military AI will be able to do the analysis of a kill-chain to determine the likelihood that an individual would be a threat. Instead of a targeted ad, the threat will receive no warning whatsoever. If the AI is able to kill, then that threat may just be neutralized automatically by AI controlled drones. If humans are left in control of the killing decision, the AI could produce a profile and present the relevant information required to procure a kill order.

4.4 Conclusion

The future is here and we are not prepared for it. But, take heart, for we never have been ready. Our emotions enable us to understand what it is to be human regardless of environmental circumstances. Our intimate connections bind us to one another and our relationships have always enabled the species to adjust to new modes of living. Together, we will learn how to operate in a world with AI, even when it is used for military applications. Most of the experts agree that it is best to leave humans in the kill-chain if AI is implemented to make the military more efficient. Otherwise, “a point can be imagined at which a drone makes and acts upon a decision to kill a human being. At that point, and if such killing is morally wrong because the drone knew the human in question to be a non-combatant (e.g. an infant), it will be vital to establish who is responsible.”¹⁴⁶ Only humans have the moral capacity to make life and death decisions. Even if they make the wrong decision, people must be a part of the decision to kill. This is the only way to ensure adequate accountability. RPAs engendered a lot of fear before they came online as people feared the ways the technology would change humans on a fundamental level. At the dawn of AI, many of the same fears of the unknown are resurfacing with regards to the implementation of technology to aid in combat and killing. However, AI is merely a tool. The steady march of technological development in combat operations has changed the means of human interaction over time while leaving the nature of that interaction unchanged. Humans still feel the emotional toll of taking life, whether it be through sword, bow, rifle, or unmanned weapon systems. As AI becomes increasingly integrated into military affairs, it will also change

¹⁴⁶ Enemark, *Armed Drones and the Ethics of War*, 105.

the means of combat, but the nature of that ancient struggle will continue on so long as humans are involved.

Bibliography

Primary Sources:

- Ball, Gregory. "1991 – Operation Southern Watch." Air Force Historical Support Division. <https://www.afhistory.af.mil/FAQs/Fact-Sheets/Article/458951/1991-operation-southern-watch/> Accessed on 30 December 2022.
- Central Intelligence Agency. "Intelligence Community Assessment of the Lieutenant Commander Speicher Case." Central Intelligence Agency, March 27, 2001. Accessed September 25, 2023. https://www.cia.gov/readingroom/docs/DOC_0000588922.pdf.
- Clausewitz, Carl Von. *On War*. London: Everyman's Library, 1993.
- Cloud, David S. "Transcripts of U.S. Drone Attack." latimes.com. Accessed September 5, 2023. <http://documents.latimes.com/transcript-of-drone-attack/>.
- Cole, Chris. "'Here's Their Actual Stories, Make of Them What You Will.' Dr Peter Lee on 'Britain's Reaper Force.'" *Drone Wars UK* (blog), September 27, 2018. <https://dronewars.net/2018/09/27/peter-lee-reaper-force/>.
- Department of Defense. "Casualty Status," September 25, 2023. <https://www.defense.gov/casualty.pdf>.
- Department of Defense. "Unmanned Systems Integrated Roadmap 2017-2042." Department of Defense, August 1, 2018. <https://apps.dtic.mil/sti/pdfs/AD1059546.pdf>.
- Diagnostic and Statistical Manual of Mental Disorders*, 5^h ed. Washington, DC: American Psychiatric Association, 2013.
- Duray, Johnny. "Forever Deployed: Why 'Combat-To-Dwell' Reform for MQ-9 Crews Is Beyond Overdue." *War on the Rocks*, January 23, 2018. <https://warontherocks.com/2018/01/forever-deployed-combat-dwell-reform-mq-9-crews-beyond-overdue/>.
- Fredly, Aldgra. "Taiwan Saw Over 1,700 Chinese Military Air Incursions in 2022: Report" *The Epoch Times*. January 3, 2023. https://www.theepochtimes.com/taiwan-saw-over-1700-chinese-military-air-incursions-in-2022-report_4958627.html Accessed 3 January 2023.
- Gallo, William. "US B-52s Fly Near South Korea, as North Korea Ramps Up Threats." *Voice of America*, December 20, 2022. <https://www.voanews.com/a/us-b-52s-fly-near-south-korea-as-north-korea-ramps-up-threats/6883900.html> Accessed on 3 January 2023.
- Gettinger, Dan. "Burdens of War: PTSD and Drone Crews," April 21, 2014. <https://dronecenter.bard.edu/burdens-war-crews-drone-aircraft/>.

- Grobe, Anna Mulrine. What's combat like for a drone operator? Up close and personal., July 29, 2021. ProQuest One Academic. <https://www.proquest.com/newspapers/what-s-combat-like-drone-operator-upclose/docview/2555987922/se-2?accountid=11862>.
- Hardison, Chaitra M., Eyal Aharoni, Christopher Larson, Steven Trochlil, and Alexander C. Hou. *Stress and Dissatisfaction in the Air Force's Remotely Piloted Aircraft Community: Focus Group Findings*. RR 1756-AF. Santa Monica, Calif: RAND Corporation, 2017.
- Janis, Irving L. *Air War and Emotional Stress: Psychological Studies of Bombing and Civilian Defense*. First. The RAND Series. New York: McGraw-Hill Book Company, Inc., 1951.
- Kube, Courtney and Mosheh Gains. "Air Force general predicts war with China in 2025, tells officers to prep by firing 'a clip' at a target, and 'aim for the head'" 27 Jan 2023. <https://www.nbcnews.com/politics/national-security/us-air-force-general-predicts-war-china-2025-memo-rcna67967>. Accessed on 4 Aug. 2023.
- Lee, Peter. *Reaper Force: Inside Britain's Drone Wars*. London: John Blake, 2018.
- Lindlaw, Scott. "Remote-Control Warriors Suffer War Stress." *NBC News*, August 7, 2008. <https://www.nbcnews.com/id/wbna26078087>.
- Mazzetti, Mark. "The Drone Zone." *The New York Times*, July 6, 2012, sec. Magazine. <https://www.nytimes.com/2012/07/08/magazine/the-drone-zone.html>.
- Morlock, Blake. "Pilot in Tucson; His Aircraft's over Iraq Battlefield," *Tucson Citizen*, August 30, 2007.
- Nussbaum, Capt Rachael L. "Changing the Tooth-to-Tail Ratio Using Robotics and Automation to Beat Sequestration." *Air & Space Power Journal* 29, no. 5 (September 2015): 75–84.
- Ochmanek, David A. *Military Operations against Terrorist Groups Abroad: Implications for the United States Air Force*. Santa Monica, CA: RAND, 2003.
- Rauch, Madeleine, and Shahzad Ansari. "Waging War from Remote Cubicles: How Workers Cope with Technologies That Disrupt the Meaning and Morality of Their Work." *Organization Science* 33, no. 1 (November 30, 2021): 83–104.
- Ricks, Thomas E. "Interview with a U.S. Air Force Drone Pilot: It Is, Oddly, War at a Very Intimate Level." *Foreign Policy* (blog), November 6, 2014. <https://foreignpolicy.com/2014/11/06/interview-with-a-u-s-air-force-drone-pilot-it-is-oddly-war-at-a-very-intimate-level/>.
- Robinson, Tim, and Stephen Bridgewater. "Highlights from the RAeS Future Combat Air & Space Capabilities Summit." Royal Aeronautical Society. Accessed September 17, 2023. <https://www.aerosociety.com/news/highlights-from-the-raes-future-combat-air-space-capabilities-summit/>.

The New York Times. *The New York Times Current History: The European War*. Vol. 1. v. 1. The New York Times Company, 1915.
<https://books.google.com/books?id=50FIAQAAIAAJ>.

United States, ed. *Intelligence Successes and Failures in Operations Desert Shield/Storm: Report of the Oversight and Investigations Subcommittee of the Committee on Armed Services, House of Representatives, One Hundred Third Congress, First Session*. Washington: U.S. G.P.O.: For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1993.

US Air Force. "Military Demographics" *AFPC.AF.MIL*. Report current as of 5Apr23.
https://www.afpc.af.mil/Portals/70/documents/DEMOGRAPHICS/DEMO1LINER_05APR23.pdf?ver=9BGHEeBozgOXWWHFB9sobg%3d%3d. Accessed on 1Sep23.

Vick, Alan and David T. Orletsky, Abram N. Shulsky, John Stillion. *Preparing the U.S. Air Force for Military Operations other than War*. RAND Project AIR FORCE: Prepared for the United States Air Force, 1997.

Vinograd, Cassandra. "Burned Alive: ISIS Video Purports to Show Murder of Jordanian Pilot." *NBC News*, 3Feb2015. <https://www.nbcnews.com/storyline/isis-uncovered/burned-alive-isis-video-purports-show-murder-jordanian-pilot-n299361>.

Wasser, Becca, Stacie Pettyjohn, Jeffrey Martini, Alexandra T. Evans, Karl P. Mueller, Nathaniel Edenfield, Gabrielle Tarini, Ryan Haberman, and Jalen Zeman. *The Air War Against The Islamic State: The Role of Airpower in Operation Inherent Resolve*. RAND Corporation, 2021. <https://doi.org/10.7249/RRA388-1>.

Watson, Mason W. *THE CONFLICT WITH ISIS: Operation INHERENT RESOLVE JUNE 2014–JANUARY 2020*. Washington, D.C: United States Army, n.d.

Willis, Jay. "What Drone Warfare Does to a Soldier's Brain." *GQ*, June 29, 2017.
<https://www.gq.com/story/drone-warfare-interview-brett-velicovich>.

Zapata, Lupe. "Texas Centenarian, WWII Veteran Gets a Day Named in His Honor." *Spectrum News*, March 16, 2022. <https://spectrumlocalnews.com/tx/dallas-fort-worth/news/2022/03/16/texas-centenarian-and-wwii-veteran-john--lucky--luckadoo-honored->.

Secondary Sources:

Aaronson, Mike, Tom Dyson, Wali Aslam, and Regina Rauxloh, eds. *Precision Strike Warfare and International Intervention: Strategic, Ethico-Legal and Decisional Implications*. Routledge Global Security Studies. London ; New York: Routledge, Taylor & Francis Group, 2015.

Ahmed, Shazeda. *Artificial Intelligence, China, Russia, and the Global Order: Technological, Political, Global, and Creative Perspectives*. Edited by Nicholas D. Wright. Maxwell Air Force Base, Alabama: Air University Press, 2019.

- Bailey, Amy Kate. *Contemporary Sociology*, vol. 48, no. 1, 2019, pp. 96–97. *JSTOR*, <https://www.jstor.org/stable/26621737>. Accessed 4 Aug. 2023.
- Baker, Berenice. “UAV Evolution – How Natural Selection Directed the Drone Revolution.” *Army Technology* (blog), November 14, 2012. <https://www.army-technology.com/features/featureuav-evolution-natural-selection-drone-revolution/>.
- Bitzinger, Richard A. “Third Offset Strategy and Chinese A2/AD Capabilities.” *Center for a New American Security*, 2016. <http://www.jstor.org/stable/resrep06122>. Accessed 13 Jan. 2023
- Bourke, Joanna. *An Intimate History of Killing: Face-to-Face Killing in Twentieth-Century Warfare*. New York: Basic books, 1999.
- Boyne, Walter J. “El Dorado Canyon” *Air & Space Forces Magazine*. March 1, 1999. <https://www.airandspaceforces.com/article/0399canyon/> Accessed 12 January 2023.
- Bronk, Justin. “The Rise of the Fighter-Bomber in the Western Desert.” *The RUSI Journal* 162, no. 4 (July 4, 2017): 50–59. <https://doi.org/10.1080/03071847.2017.1370294>.
- Calhoun, Laurie. *We Kill Because We Can: From Soldiering to Assassination in the Drone Age*. London: Zed Books, 2015.
- Chambers, John Whiteclay. “Conference Review Essay: The New Military History: Myth and Reality.” *The Journal of Military History*, vol. 55, no. 3, 1991, pp. 395–406. *JSTOR*, <https://doi.org/10.2307/1985686>. Accessed 9 Aug. 2023.
- Chamayou, Grégoire, and Janet Lloyd. *A Theory of the Drone*. New York: The New Press, 2015.
- Cheng, Christopher C. S. *Air Mobility: The Development of a Doctrine*. Westport, Conn: Praeger, 1994.
- Chow, Brian G. *The Peacetime Tempo of Air Mobility Operations: Meeting Demand and Maintaining Readiness*. Santa Monica, CA: Rand, Project Air Force, 2003.
- Citino, Robert M. “Military Histories Old and New: A Reintroduction.” *The American Historical Review*, vol. 112, no. 4, 2007, pp. 1070–90. *JSTOR*, <http://www.jstor.org/stable/40008444>. Accessed 9 Aug. 2023.
- Coffman, Edward M. “The Course of Military History in the United States Since World War II.” *The Journal of Military History*, vol. 61, no. 4, 1997, pp. 761–75. *JSTOR*, <https://doi.org/10.2307/2954085>. Accessed 8 Aug. 2023.
- Daggett, Cara. “Drone Disorientations: HOW ‘UNMANNED’ WEAPONS QUEER THE EXPERIENCE OF KILLING IN WAR.” *International Feminist Journal of Politics* 17, no. 3 (July 3, 2015): 361–79. <https://doi.org/10.1080/14616742.2015.1075317>.

- Din, Allan M., and Stockholm International Peace Research Institute, eds. *Arms and Artificial Intelligence: Weapon and Arms Control Applications of Advanced Computing*. Oxford ; New York: Oxford University Press, 1987.
- Enemark, Christian. *Armed Drones and the Ethics of War: Military Virtue in a Post-Heroic Age*. War, Conflict and Ethics. New York: Routledge, Taylor & Francis Group, 2014.
- Gordon, Geoff. "On the Future Perfect of Artificial Intelligence and War: *War and Algorithm* Review. Max Liljefors, Gregor Noll, and Daniel Steuer, *War and Algorithm*." *Journal of Conflict and Security Law* 26, no. 3 (December 8, 2021): 577–93. <https://doi.org/10.1093/jcsl/krab013>.
- Grossman, Dave. *On Killing: The Psychological Cost of Learning to Kill in War and Society*. Rev. ed. New York: Open Road Media, 2014.
- Gusterson, Hugh. *Drone: Remote Control Warfare*. Cambridge, Massachusetts: The MIT Press, 2016.
- Hayward, Joel S. A., ed. *Air Power, Insurgency and the "War on Terror."* Cranwell, United Kingdom: Royal Air Force Centre for Air Power Studies, 2009.
- Keegan, John. *The Face of Battle*. New York: The Viking Press, 1976.
- Kester, MARRISA N. *There From the Beginning*. Maxwell AFB: Air University Press, 2021.
- Krishnan, Armin. *Killer Robots: Legality and Ethicality of Autonomous Weapons*. Farnham: Ashgate, 2010.
- Langhamer, Claire, Lucy Noakes, and Claudia Siebrecht, eds. *Total War: An Emotional History*. First edition. Proceedings of the British Academy 227. Oxford: Oxford University Press, 2020.
- Laslie, Brian D. *The Air Force Way of War: U.S. Tactics and Training after Vietnam*. Lexington: The University Press of Kentucky, 2015.
- Lee, Wayne E. "Mind and Matter-Cultural Analysis in American Military History: A Look at the State of the Field." *The Journal of American History*, vol. 93, no. 4, 2007, pp. 1116–42. *JSTOR*, <https://doi.org/10.2307/25094598>. Accessed 8 Aug. 2023.
- Lee, Wayne E., David L. Preston, Anthony E. Carlson, and David Silbey. *The Other Face of Battle: America's Forgotten Wars and the Experience of Combat*. New York: Oxford University Press, 2021.
- Mansoor, Peter R., and Williamson Murray, editors. *The Culture of Military Organizations*. Cambridge University Press, 2019.
- Mindell, David A. *Our Robots, Ourselves: Robotics and The Myths of Autonomy*. New York: Viking, an imprint of Penguin Random House LLC, 2015.

- Pennington, Reina. *Wings, Women, & War: Soviet Airwomen in World War II Combat*. Lawrence: University Press of Kansas, 2001.
- Rosenwein, Barbara H. *Emotional Communities in the Early Middle Ages*. First printing, Cornell paperbacks. Ithaca, NY: Cornell Univ. Press, 2007.
- Shaker, Steven M., and Alan R. Wise. *War without Men: Robots on the Future Battlefield*. Future Warfare Series 2. Washington: Pergamon-Brassey's, 1988.
- Shalit, Ben. *The Psychology of Conflict and Combat*. New York: Praeger, 1988.
- Showalter, Dennis E. "A Modest Plea for Drums and Trumpets." *Military Affairs*, vol. 39, no. 2, 1975, pp. 71–74. *JSTOR*, <https://doi.org/10.2307/1986931>. Accessed 9 Aug. 2023.
- Shy, John. "The Cultural Approach to the History of War." *The Journal of Military History*, vol. 57, no. 5, 1993, pp. 13–26. *JSTOR*, <https://doi.org/10.2307/2951799>. Accessed 9 Aug. 2023.
- Stearns, Peter N. *American Fear: The Causes and Consequences of High Anxiety*. New York: Routledge, 2006.
- Warden, John A. III., *The Air Campaign: Planning for Combat*, Washington DC: National Defense University Press, 1988.

Appendix

Appendix A: Figures

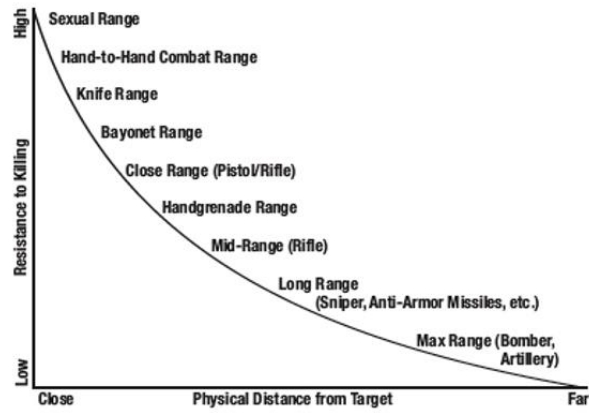


Fig 1. Grossman's Chart Detailing Resistance to Killing as a Function of Distance to Target

Vita

Jordan K. K. Bolster graduated from the USAF Academy in Colorado Springs, CO in 2013 where he earned a B.S. in History. After commissioning as a 2nd Lieutenant, he went on to finish undergraduate pilot training at Vance AFB, OK in 2015. He then spent 7-years flying KC-10s out of Travis AFB, CA where he progressed from a young co-pilot to a less-young formal training unit instructor pilot. The completion of this thesis will earn him an M.A. in History from the University of Tennessee.