Distance in War: The experience of MQ-1 and MQ-9 aircrew

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To fight from a distance is instinctive in man. From the first day he has worked to this end, and he continues to do so.

- Ardant du Picq[1]

There is no empirical distinction to the killer [RPA aircrew] between what he does in obliterating a target and what he does in playing a video game.

- Laurie Calhoun[2]

For thousands of years combatants have continually moved further and further away from the point of direct physical engagement during battle. The longbow, musket, cannon, and airplane are a few examples of technology that provides an extended reach for those who possess such instruments of warfare, and simultaneously reduces the risk of death should one retain the technological advantage. This unending transformation has resulted in palpable physical and emotional distancing between attackers and their targets. At their inception, remotely piloted aircraft

(RPA) appeared as the next evolution in this process, providing near complete separation between adversaries. Yet, there is anecdotal and medical evidence indicating RPA aircrew experience mental reactions to warfare as strong as Post-Traumatic Stress Disorder. The confusing array of fact and opinion on this subject demanded a study focused specifically on characterizing the psychological responses to killing from RPA aircrew and understanding their level of mental engagement with combat. The findings of this study have significant implications for the MQ-1/9 community and the overall military in understanding the changing character of modern warfare.

The experience of killing via RPA

MQ-1 and MQ-9 aircrew engaged in combat operations are subjected to a unique environment, an evolution in warfare that places killers thousands of miles away from their targets, yet provides remarkably clear pictures of the event and subsequent aftermath. Controlling their aircraft and weapons from the relative safety of stateside operations, the RPA pilot and sensor operator are presented with an array of video monitors which provide a picture of their combat environment, several maps displaying their battlespace, aircraft health and status displays, and nearly ten separate methods for communication with the outside world.

The technical aspects of weapons engagements via MQ-1/9 are similar to manned aircraft. The pilot coordinates with the supported unit, gathers details on the target and requested effects, develops an attack plan, and receives final permission to strike. The sensor operator maintains the camera on the target area and scans for any possible collateral damage areas. Once approved to employ weapons, the pilot will position the aircraft into a location suitable for attack, select the appropriate weapon and release it towards the target. With a weapon in flight, the sensor operator will maintain the camera on target, including firing a laser that assists in guiding the weapon if required. Both crewmembers watch the video simultaneously on separate screens throughout the engagement.

Previous Studies and Opinions

Previous studies of MQ-1 and MQ-9 aircrew focused on rates of Post Traumatic Stress Disorder and occupational stress across the community. A 2011 study by the USAF School of Aerospace Medicine (SAM) revealed that 14-26% of RPA aircrew experience emotional exhaustion, primarily due to shift work and long duty hours.[3] A 2014 follow-up study conducted by USAF SAM found that 4.3% of RPA operators displayed symptoms of moderate to extreme levels of severity for PTSD.[4] While these studies indicate MQ-1/9 aircrew are responding to stimuli in their work environment, including some level of negative psychological reaction following their involvement in combat operations, we lacked a study that focused specifically on the broader questions regarding the psychological impacts of killing and the level of mental engagement, or understanding, RPA aircrew display in their daily activities.

Despite the lack of focused studies in these areas, numerous opinions regarding the level of mental engagement among MQ-1/9 aircrew, or lack thereof, have been published. Emotional distancing via technology embedded in RPAs often distills into a two-pointed proposal regarding video-game warfare. The first point revolves around violent video games and their ability to desensitize people to horrific acts, violence, and killing. The second point states killing via RPA operations has effectively turned war into a video game for the RPA aircrew. These two points are often fused to paint a picture of video-game-playing RPA aircrew who have no understanding of the actual destruction their weapons are causing. Additionally, even if RPA aircrew did understand the physical destruction their weapons caused, their upbringing and the technical nature of RPA operations has desensitized the aircrew to the point that they are unable to generate any true emotions or understanding of their actions.

In a 2010 article published in *Ethics and Information Technology,* authors Lambér Royakkers and Rinie van Est claim RPA operators who have been playing video games throughout their teenage years might not see much contrast between the experience of playing a video game and actually employing weapons remotely.[5] Royakkers and van Est present the new term 'cubicle warrior' to define an operator who controls the deadly robots using visual or technological interfaces.[6]

Royakkers and van Est further assert that RPA cubicle warriors are unaware of the consequences of their decisions. They claim cubicle warriors simply target blips on a screen, "Not fully consciously aware that these blips are human beings."[7] The outcome of such ignorance results in moral disengagement for the RPA aircrew.

Within her article titled, "The End of Military Virtue," author Laurie Calhoun states, "Training [RPA aircrew] to kill in the manner of sociopaths with no feelings whatsoever for their victims because they are but icons on computer screens is a frightening prospect."[8] Calhoun continues:

The emotions associated with the activity of killing and risking death have been progressively muted with distance and now eliminated from the act altogether in summary executions effected by UAVs and managed by desktop warriors.[9]

Indeed, Calhoun is convinced RPA aircrew have no sense of the reality of their actions, presumptuously comparing the killing of another human being via RPA to shopping on Amazon.com

If authors such as Calhoun, Royyakers, and van Est are correct, the end result is a community of RPA aviators who do not contemplate or question the order to kill, never hesitate to employ weapons, and who cannot possibly display any significant psychological response following the act since they are doing nothing more than playing video games. These claims, however, were made primarily on supposition because, until now, we lacked any significant academic or medical research to support a psychological characterization and understanding of the RPA aircrew who have employed weapons in combat.

Study Goals and Methodology

The purpose of this study was to characterize the psychological responses to killing among RPA aircrew and determine their overall level of mental engagement and understanding of warfare despite the distances involved. The methodology involved interviewing over one-hundred MQ-1/9 aircrew who have employed weapons and killed via remote-combat operations. Interview responses were categorized across the emotional, social, and cognitive domains for comparison with three separate categories of independent variables, including aircrew demographics, mission types, technology applications, and target tracking time. This study was developed and conducted with the support of Dr. Wayne Chappelle and the USAF's 711th Human Performance Wing.

The Emotions of Killing[10]

MQ-1/9 aircrew displayed relatively high rates of emotional response to their first kill, with nearly three-quarters of interview subjects reporting a first-strike emotional response. Demographic variances, including prior-manned-aircraft experience or prior-combat deployments, failed to demonstrate any statistically significant differences in emotional response rates to killing via MQ-1/9. Stated another way, the emotional responses to killing via RPA did not vary based on whether the aircrew previously flew an F-16, deployed as a security-forces airman, or has never deployed or flown a manned aircraft.

Moreover, RPA aircrew displayed significant conflicting emotions both inter-strike and intra-strike. Within a single strike, nearly a quarter of the aircrew reported both positive and negative

emotions to the same event. The most common response was a positive emotion following mission success or supporting friendly ground forces juxtaposed with negative emotions for the taking of human life. Inter-strike, aircrew emotions were highly dependent on the details of a particular mission, with specific focus on the safety and success of friendly ground forces and the avoidance of civilian casualties and collateral damage. The status, and specifically safety, of friendly ground forces was found to result in the highest rates of emotional response across the entire study. Fellow Americans, soldiers the RPA aviators have never spoken with or met, were repeatedly shown to have the highest impact in emotional connection to warfare among the MQ-1/9 aircrew.

Focusing specifically on the negative emotional responses to killing, the RPA study population reported first-kill negative emotions on 33% of their strikes, with no statistically significant differences among the various aircrew demographics. Pilots with prior mobility or reconnaissance aircraft experience reported the highest rate of first-kill negative emotions (44%) and prior fighter/bomber pilots reported the lowest rates of first-kill negative emotions (10%). Aircrew with no prior manned aircraft or combat deployment experience (commonly called "18xers" in USAF lexicon), reported first-strike negative emotions at a 37% rate, slightly elevated from the overall study average of 32%. The elevated psychological response rates of "18xers" compared to other aircrew who have witnessed and engaged in combat prior to joining the MQ-1/9 community was an expected result.

Finally, 4% of those interviewed reported such a strong aversion to killing that they took steps to avoid it. Half of these killing-averse personnel informed their leadership of the aversion and were removed from situations that had a high probability of weapons employment. The other half also removed themselves from situations that may have required killing, but did so covertly to avoid letting their peers or superiors know they had an aversion.

Qualitatively, interview quotes are useful in illuminating illuminate the array and depth of psychological responses following an MQ-1/9 pilot or sensor operator's first kill.

-"I still think 'What did I do?' I took a human life. It's pretty crazy, but this is a job requirement. We have to eliminate threats...that's how I cope with it."

-"The moment [I killed someone] is still in my head. It's surreal. I sit and reflect on it. I try to find something to take my mind off it."

-"I was proud and excited at first. After a couple days it wore off…it's a little different when you are alone with your thoughts. If I had the choice, I would not strike again. I'll do it if required, but won't ask for it…I don't feel guilty about what I did, but I would prefer to not kill."

-"I was happy we helped friendlies. But if we have to take human life, it's regrettable. I feel good for our performance, but never celebrate the killing."

-"If I had the choice, I would not strike. I'll do it if required, but won't ask for it. I don't feel guilty about what I did, but I would prefer to not kill others."

-"It's about supporting the ground units, not taking life."

Finally, when aircrew were asked whether they had come close to employing weapons without finishing the kill, twenty-two subjects provided examples where their personal intervention in a mission likely prevented unintended casualties. All twenty-two stories were remarkably similar. In each story, the aircrew were directed to strike a target, but something just 'did not feel right' to them regarding the situation, the target identification, or the surrounding area. In every case, the aircrew took positive steps to understand the situation, develop their own mental model of the battlespace, and then recommend (or demand) a different course of action besides immediate weapons engagement via RPA. All twenty-two individuals steadfastly believe that had they simply followed directions without delay or critical inquiry, collateral damage or civilian casual-

ties were nearly assured. If killing from a distance is easily performed, we should not expect to have over twenty MQ-1/9 aircrew claiming they waited, contemplated, and acted against killing because they were concerned with the death and destruction resulting from their actions.

A Video-Gaming mentality?

The MQ-1/9 aircrew interviewed for this study averaged 2.4 hours of video gaming per week. Compared to previous studies, MQ-1/9 aircrew are playing video games in their personal time at similar rates to other western adults. A 2008 Pew Research study investigated the frequency of video-game playing and reported 53 percent of American adults aged 18 and over play video games in their personal time, closely matching the RPA rate of 50.5%[11] Assuming a video-game player engages between thirty and sixty minutes per session, the Pew research participants played video games between 1.5 - 4.0 hours per week, again closely resembling the aircrew from the RPA study. While this finding may provide some with a sense of normalcy regarding RPA aircrew, the more relevant fact is we currently lack an accepted standard for video-gaming frequency. Thus, RPA aircrew averaging 2.4 hours per week becomes curiously interesting and moderately comforting, yet remains largely irrelevant due to the lack of true societal standards.

MQ-1/9 aircrew were also queried on whether they considered RPA operations to be a video game and how did they feel about such a comparison. In response, aircrew were unanimous in their statements that RPA operations are not a video game. This point cannot be overstated. Every interview participant, regardless of whether they were an 18xer, previously flew the A-10, or experienced a positive or negative psychological response to killing, were united in stating that RPA combat operations are not akin to video gaming. Specific interview quotes are illuminating and provide an insight into the RPA aircrew mentality on this issue.

-"Watching this through a video is not equal to a video game. I'm not a child, this is not fiction."
-"Somebody is dead due to our actions. It's not a video game. People's lives are on the line."
-"It's nothing like a video game. Nobody gets hurt in video games. I hate that comparison."
-"It's not a video game. It's stressful, serious, complicated. Calling it a video game detracts from what we are doing."
 -"People outside our community are not even worth my time in having this discussion."
-"I know it's not a video game. This isn't make believe. Civilians just don't understand. If I was playing a video game I could hit reset."
-"It's not a **** video game. Nothing in a video game is like this. There are real people on the ground."

Mental connection

This study used both direct and indirect inquires to quantify the level of mental engagement with combat among MQ-1/9 pilots and sensor operators. Indirectly, psychological responses to killing provided key evidence regarding mental engagement. Combining the response rates across the emotional, social, and cognitive domains resulted in a first-kill psychological response rate of 94% for all aircrew. More directly, interview participants were queried on their level of mental engagement to combat via RPA and 84% of them claimed to be mentally engaged. Moreover, all but a single participant claiming mentally disengagement still reported a first-strike psychological response. One final interview response is provided below that demonstrates the level of mental engagement and subsequent psychological response.

We kill him…that's the first time I saw someone dead and we zoom in to view the dead body and get BDA [bomb damage assessment]. Right then, it hit me. My heart just started pumping. I went home that night and couldn't talk with my wife. She knew something was wrong. I couldn't get that image

of his [dead] body out of my mind. Then about four days later I started thinking about a kid growing up without his father that I had killed. The humane thing is to let him live, but this guy was trying to kill Americans. Finally, about two weeks later I broke down. I couldn't hold it in anymore and I had to seek help…I wanted to know if God was OK with what I was doing.

Discussion

Physical and technological distancing of RPA aircrew from their targets may be reducing the potency of their engagement and subsequent reactions to killing in warfare as compared to other warriors and methods. However, without a comprehensive data set from which to compare MQ-1/9 aircrew to other combatants, we cannot state for certain that RPA aircrew are more or less mentally engaged and psychologically impacted than their manned-aircraft counterparts or the sniper who kills from distances that were considered blasphemous several centuries ago. Rather, this study provides utility in demonstrating that the mental engagement with warfare and psychological reaction to killing still exists among contemporary warriors and has not been reduced to zero in the MQ-1/9 community. Simply, warfare via MQ-1/9 has not been reduced to playing a video game. The aircrew engaged in these operations are professional, serious, engaged, and psychologically impacted by the work they perform.

The continuing ethical and moral relativism society uses to place new weapons and methods on the battlefield are in plain view with the MQ-1/9; perhaps even more so given the ability for the general public to view killing via RPA as quickly as one can type "MQ-1 Strike" into a Google search query. But this fact has not reduced the psychological engagement among the aircrew to zero, or even to an amount small enough that we should begin to question their ability to comprehend warfare and killing despite the vast distances involved.

This grander context suggests that MQ-1/9 simply represent another step in the evolution of distance-based warfare and not the crossing of some imaginary precipice that we should attempt to turn back from. Based upon centuries of military technological and cultural advancements, we should have anticipated the cries of airmen, soldiers, and statesmen lamenting the morphing of warfare via MQ-1/9 into a video game devoid of seriousness and lacking any recognition of the noble warrior traditions currently in use. They echo the slow acceptance rates of previous weapons and methods for much the same rationale. Bowmen, riflemen, and snipers all experienced similar critiques as they were introduced onto the battlefield and grudgingly accepted. MQ-1/9 aircrew have fared no better or worse in this regard.

The cycle of *critique-accept-repeat* is a trend that has persisted for centuries. This continuing process is not inherently good or bad, it just is. If the trends established by hundreds of years of history continue, we shall soon enough have MQ-1/9 pilots critiquing the next evolution in warfare (perhaps in cyber or automation) for its lack of warrior tradition and psychological connection between combatants. That is, unless, the mantle is never passed to RPA aviators because their weapons and craft have been banned from the battlefield, effectively ending the community and the careers of those who operate the MQ-1/9. While a desirable outcome for some, it is highly unlikely given the proven utility of these aircraft, their sensors, and their weapons. Armed with data from studies such as this one, we also find it unnecessary.

In the discussion and debate regarding RPAs and killing, the biggest issue society failed to comprehend was the ability for technology to both *separate and connect* the warrior to the fight. Developing a myopic focus on the negative aspects of technological advancement in warfare via RPA caused us to lose sight of the grander picture. Technology is clearly *connecting* MQ-1/9 aircrew to combat in ways that demand change in the way society views technology in RPAs and subsequent warfare methods and weapons.

Perhaps the video clip itself should shoulder much of the blame for this shortcoming. The public can easily view an RPA strike video via the internet that lasts five to thirty seconds and might be set to music. Under these circumstances, it becomes easy to think of killing via MQ-1/9 as less-than-serious and almost game-like to the aircrew. But the internet video lacks the additional sensory inputs of voice, data, and cockpit displays that connect the aircrew to the ground forces they support. Additionally, these short video segments lack background and context on the mission and the many hours spent preparing before the decision to kill was relayed to the aircrew. The superficial aspects of the video itself provide an easy avenue to declare that war has become a video game when one does not comprehend or have access to the rest of the story.

Even veteran fighter pilots with no RPA experience are at risk of viewing MQ-1/9 operations as a video game because they do not possess first-hand knowledge of vast array of sensory connections that bring the RPA aircrew into the combat environment. Recently, an F-16 pilot with years of fighter experience and several combat deployments was invited to sit in an MQ-9 cockpit and observe a Close Air Support (CAS) training mission. The mission consisted of a small group of friendly ground forces entering a hostile village and coming under fire from over a dozen enemy, requiring immediate assistance and weapons from the MQ-9. Following the sortie, the F-16 pilot was asked what he thought about the mission.

> *It felt like CAS. Even though we were sitting in a box on the ground miles away from the action, I could feel my heart rate rising and my adrenalin start flowing when those friendlies took fire. It felt real and I did not think it was going to be like this. It was a lot like being in the F-16.*

The F-16 pilot recognized the similarities between his manned aircraft and the MQ-1/9, but only after experiencing combat through the technological aperture of the MQ-9. Prior to this episode, this F-16 pilot's experience with killing via RPA was restricted to watching post-strike videos in the same manner as most other personnel curious about RPA operations. Simply, he was unaware of the ability for the technology inherent in the MQ-1/9 system to mentally *connect* him to the battlefield.

Conclusion

The United States places a sacred trust in the armed forces to protect and serve in the best interests of the nation at the direction of civilian leadership. If the United States public believes its military forces are treating warfare as a game instead of a serious instrument of national power, the trust between a nation and its military stands grave risk of erosion. How can a military be trusted if it's members give no thought to the taking of human life or consider killing a glorified video game?

Thankfully, this has not occurred in the MQ-1/9 community. RPA aircrew are well aware that their aircraft, weapons, and resulting destruction is real, regardless of the distance involved or the medium in which they view their work. Their work, while largely conducted through a technological aperture to the combat environment, is not a video game to the aircrew involved. The same technology that allows them to physically separate themselves from the battlefield connects them in a psychologically significant fashion.

As the longbow overcame the advantages enjoyed by armored knights and steam abruptly ended the quiet solitude of sailing to meet one's enemy on the high-seas, so too does the advent of weaponized RPAs represent a risk to the current hierarchy among warriors and the military bureaucracies that administer them. Indeed, this is an important consideration among warriors and all democratic nations that support the raising of armies for their national defense. But the discussion must remain confound to the realm of factual knowledge and ideas constructed via

logical inductive reasoning. Short of this threshold, we risk allowing emotional and bureaucratic influences to permeate the debate, polluting it to the point of nonsense.

In the sense of video games and their comparison to RPAs, this is already occurring. While the public debates the issue back-and-forth, RPA aircrew themselves are so astounded by the absurdity of the topic that most choose to avoid it altogether. In discussing RPAs, we may find ourselves repeating the same sail-versus-steam argument, but this time in aerial warfare and manned versus unmanned aircraft. Years later we may come to realize that our strong convictions about warfare and weaponry were superseded long ago, but we were blinded by emotion or bureaucracy and failed to recognize the change occurring all around us. Alas, we were content to be left behind and enjoy the remainder of our days in outdated sailing craft. What a wonderful place to spend one's days if the national defense of the United States were not at risk in the decision.

Notes

1. Charles Jean Jacques Joseph Picq and John Nesmith Greely, *Battle Studies; Ancient and Modern Battle* (Harrisburg, PA.: Military Service Publication, 1947), 54.

2. Laurie Calhoun,"The End of Military Virtue," *Peace Review* 23: 382.

3. J. Ouma, W. Chappelle, and A. Salinas. "Facets of occupational burnout among U.S. Air Force active duty and National Guard/Reserve MQ-1 Predator and MQ-9 Reaper operators," Wright-Patterson AFB, OH: U.S. Air Force School of Aerospace Medicine, 2011: 23

4. W. Chappelle, T. Goodman, L. Reardon, W. Thompson. "An Analysis of post-traumatic stress symptoms in United States Air Force drone operators," Journal of Anxiety Disorders 28 (2014): 480.

5. Lambér Royakkers and Rinie van Est, "The cubicle warrior: the marionette of digitalized warfare," *Ethics and Information Technology* 12 (2010): 289.

6. Royakkers and Rinie van Est, 289.

7. Royakkers and Rinie van Est, 292

8. Laurie Calhoun, "The End of Military Virtue," *Peace Review* 23: 381.

9. Calhoun, 382.

10. The study investigated aspects of the emotional, social, and cognitive domains across RPA aviators who have killed remotely. Only a portion of the emotional domain results are presented here for brevity's sake.

11. A. Lenhart, S. Jones, and A. Macgill, "Adults and Video Games," *Pew Internet and American Life Project* (December 7, 2008), 1.

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