

ABSTRACT

Drone Warfare: Ethical Controversies and Voices of Experience

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The use of unmanned aerial vehicles, or ‘drones’ has drastically increased in the last two decades. That increase has been accompanied by a rise in anxiety – both among the general public and military ethicists – about the ethical challenges that arise with the use of these weapons. In this thesis, I explore these ethical controversies both by reviewing existing literature and offering my own analysis of the issues. Following my initial survey, I conclude by putting the ethical issues I identify in conversation with my proprietary interviews with members of the U.S. Army and Air Force. Accordingly, this thesis is a combination of exclusive interviews I obtained as part of my research, which are included as transcripts, and a survey and detailed exploration of the ethical issues that arise with the use of ‘drones’ in warfare.

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DRONE WARFARE: ETHICAL CONTROVERSIES AND VOICES OF EXPERIENCE

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CHAPTER ONE

Old Answers to New Questions – Just War and the Challenges We Face

"We are rarely called upon to invent new ethical principles; if we did that, our criticism would not be comprehensible to the people whose behavior we wanted to condemn. Rather, we hold such people to their own principles, though we may draw these out and arrange them in ways they had not thought of before." – Michael Walzer¹

There are two basic camps a person can fall into when thinking about war: people who think there is a morally right way to wage war, and people who think there is not. This is written for the former group of people. The latter, comprised of the pacifists and political ‘realists’, either think that war is too horrible to be waged at all or that the conditions of war are such that moral rules do not apply to it. For the realists, the only sense of rightness in the conduct of war is military and political efficacy, i.e. success. For the pacifist, there is no right way to conduct a war. While both of these positions have distinguished defenders, I am interested in what has historically been the much more popular approach to war – war with moral rules. Rules of war date back almost as long as humans have been recording history, with some of the earliest examples in the Sanskrit Epic, the Mahābhārata, and the Old Testament or Torah. Even the *Iliad*, written between the 8th and 9th centuries B.C.E., espoused certain standards of engagement, like the concept of *xenia* (friendship or hospitality) that survived even the worst enmity. Diomedes, whose grandfather Oeneus had hosted a feast for Glaucon’s grandfather, Bellerophon, said to Glaucon in Book VI:

¹ Michael Walzer. *Just and Unjust Wars*. (Harmondsworth, Middlesex, England: Penguin Books Ltd., 1984.), XV.

“Thus I am your beloved guest in the breast of Argos...
Let us turn our lances away from each other, even in battle.”²

The *Iliad* can hardly be credited with depicting a war anybody would now consider to have been conducted “justly.” At least, it would not be just according to the rules of war as those were developed in the West in the late Middle Ages and early modern periods and further developed in the past century. Rape and enslavement are staples of the epic, the pleas of the innocent were often ignored, and Hector’s corpse was dragged outside the gates of Troy with shocking indifference to Article 34 of the Geneva Convention. Even in this context, there were still rules governing engagement that one simply did not ignore, and Homer was singing for an audience that was expected to know this. This at least suggests that there is an inclination amongst human beings to curb our most violent behavior.

Another early example, this time from the Mahābhārata states³:

“One should not attack chariots with cavalry; chariot warriors should attack chariots. One should not assail someone in distress, neither to scare him nor to defeat him. There should be no arrows smeared with poison, nor any barbed arrows – these are weapons of evil people. War should be waged for the sake of conquest; one should not be enraged toward an enemy who is not trying to kill him.”⁴

² Weil, Simon. “The Iliad, or the Poem of Force.” (Chicago Review, 1965.), 23.

³ This statement from Krishna is interesting in the context of the full Mahābhārata and it is worth noting that it would later be Krishna who would order the prince, Arjun, to break this rule when he kills Karna after dismounting from his chariot. The breaking of rules under certain circumstances is often justified by the Gods in the Mahābhārata as being necessary for the preservation of ultimate good. For those interested, the Mahābhārata also contains rules of war that limit the use of weapons technology that mirror thermonuclear weapons. For instance, Krishna steps in to prevent the use of the brahamstra, which would have destroyed the universe.

⁴ Fitzgerald, James L. *The Mahābhārata*. (Chicago, United States: University of Chicago Press, 2004.) 411.

It is worth noting how closely this resembles the Geneva Convention's Protocol I, Section 41, which prohibits engaging soldiers who are recognized as "*hors de combat*," and the 1925 Geneva Protocol prohibiting the use of chemical weapons.⁵ That a poetic epic written nearly three millennia ago would contain nascent versions of rules that would be formalized during the age of artillery and machine guns is, at the very least, thought provoking.

Clearly, the rules of war have deep roots, be they historical, psychological, sociological, or (insert your field of study here). The question in which I take an interest is: are these roots *natural*? Do human beings have a natural inclination to impose rules in the conduct of war? This question is more complicated than it might at first seem, so I need to define my terms. Natural, in this context, refers to something that is not created by artifice or design. It is not a convention that could be abandoned if its participants so chose. Instead, it is rooted in something fundamental to what makes a human being a human being – something like our "essence" in the Aristotelian sense. Certainly, one might consider a person who lacked any sense of constraint in violence – initiating conflict at the slightest provocation, or dragging their enemy's corpse outside the city gates – to have lost something crucial to their humanity. Such people form tragic figures precisely because they no longer seem to be fully human.

Moreover, my account needs to say something about why it *matters* whether or not rules in war are natural to humans. That is to say, it should be a normative, and not merely a descriptive, account of human nature. Perhaps humans do naturally restrain

⁵"1925 Geneva Protocol – UNODA." *United Nations*, United Nations, www.un.org/disarmament/wmd/bio/1925geneva-protocol/.

themselves in wartime, so what? At first glance, the fact that something is *natural* does not seem to tell us anything about what constitutes right or wrong, just or unjust, behavior.

Thankfully, one of Just War Theory's most influential thinkers has already explored this question on our behalf. In his *Summa Theologiae*, St. Thomas Aquinas discusses the idea of "natural law," a system of ethical precepts that should govern human conduct. Aquinas recognizes the objection that not all "acts of virtue" necessarily belong to natural law. One might object that they could be directed towards a private good, or in our context, something created by artifice or design, a mere instance of periodically conventional behavior. Aquinas addresses this objection by stating that virtuous acts are given their status as a product of mankind's natural inclination towards virtuous behavior as a result of reason, writing, "each thing is inclined naturally to an operation that is suitable to it according to its form: thus fire is inclined to give heat."⁶ In Aquinas' understanding, what is natural to mankind is twofold. First, mankind is naturally a rational species: "By human nature we may mean either that which is proper to man—and in this sense all sins, as being against reason, are also against nature."⁷ Second, there are modes of behavior that are natural to mankind, and this is shared with the animals, which are non-rational beings: "That nature which is common to man and other animals; and in this sense, certain special sins are said to be against nature."⁸ Thus,

⁶ Thomas, Aquinas. "*Summa Theologiae*." (*Prima Secundae Partis*), New Advent, 2017.), II, Q. 94, A. 2.

⁷ *Ibid.*, II, Q. 94, A. 2.

⁸ *Ibid.*, II, Q. 94, A. 2.

because there are certain modes of operation for which a thing is naturally suited, and for human beings this involves both acting rationally and conforming to certain norms of behavior dictated by our natural inclinations, there is an account of the natural to which we can assign normative value.

Aquinas' account is just as applicable today as it was when it was written in the 13th Century. Its most basic thesis – that there is indeed a fundamental human *nature* that is prescriptive for rational action – is predicated on a set of fundamental premises. First, Aquinas asks us to accept that all things have a mode of operation that is natural to their form; for instance, fire is naturally inclined to give heat.⁹ Next, we must accept that mankind's proper form is that of a rational being, and that mankind's rational goal would be to pursue virtue.¹⁰ It follows, and this is my argument now, that unless we are willing to argue that unconstrained war – war without rules – is virtuous, then it is not mankind's nature to fight wars unconstrained. I argue that the examples above and throughout history demonstrate that unconstrained war has almost never been considered virtuous for its own sake. These premises are contestable, but only if one is willing to discount some of humanity's greatest commentaries on war as having nothing true to say about the matter.

Let us now return to the two positions from earlier: the (1) pacifist and (2) realist positions. In the context of this paper, I will avoid addressing the contingent positions that are possible approaches to both pacifism and realism. While these positions may have merit, my purpose here is to demonstrate that in opposition to (1) we should

⁹ *Ibid.*, II, Q. 94, A. 2.

¹⁰ *Ibid.*, II, Q. 94, A. 2.

sometimes fight wars, and that in opposition to (2) we should fight them within the context of certain constraints.

The pacifist position would maintain that all warfare is wrong and ought to be avoided. This position is usually predicated on one, or a combination of, the following premises: first, that the intentional taking of human life is always wrong; second, that peace is its own intrinsic good and inherently desirable; and third, the consequentialist approach, which states that, if one desires the end of wars (even if one permits violence in some alternate context), the only means of achieving that goal is by refusing to fight. None of these views necessitates a belief in the other, although they are often bedfellows. There is neither space nor need here to address each one of the points individually. Suffice it to say that I think they are listed in order from least defensible to most and that whatever their positive attributes may be they all lack one thing – feasibility. Just as I argue there is a fundamental aspect of their nature that inclines human beings to impose rules of war and that this is demonstrated by history, so I also argue that human beings have a fundamentally warlike nature. Our epics are about war; our poems, songs, movies and TV shows are about war. When we have been through a particularly bad war and claim to be disillusioned by it, our favorite cultural activity becomes discussing the war. Each gritty detail gets to be examined so that (because we are now disillusioned) we shall never make the mistake of fighting a war again. Of course, we always do and I argue are likely always to do so, at least for the foreseeable future. In short, only when we can produce an instance where a society has become truly and permanently disinterested in war, will it seem reasonable to readdress the feasibility of pacifism as more than a utopian ideal.

The realist position tends to take one of two views: war is not governed by any moral principles whatsoever, or moral principles in war are not unilaterally observed and, therefore, the goal ought to be to end the war as quickly as possible by whatever means necessary. This first view is something like a nihilist position, or at the very least rejects the application of moral values in the context of war, and I can only refute it by the same appeals to history I have made before. Throughout history mankind has believed in moral principles in warfare, so unless we are willing to completely discount their beliefs then we cannot conclude there are no moral principles in war. The second position is more compelling. During the American Civil War, the Union general William T. Sherman wrote in a letter to the city council of Union-occupied Atlanta, saying, "You cannot qualify war in harsher terms than I will. War is cruelty, and you cannot refine it; and those who brought war into our Country deserve all the curses and maledictions a people can pour out."¹¹ He would later famously distill this into the oft-repeated phrase: "war is hell."¹² The result of this position is that moral considerations which might constrain military activity, for instance on the basis of preventing harm to noncombatants, are sometimes viewed as ultimately prolonging suffering. I am unconvinced by this position

¹¹ "Letter of William T. Sherman to James M. Calhoun, E.E. Rawson, and S.C. Wells, September 12, 1864," Omeka RSS, 1, accessed April 06, 2018, <https://cwnc.omeka.chass.ncsu.edu/items/show/23>.

¹² Edward Caudill and Paul Ashdown, "Sherman's March in Myth and Memory," GoogleBooks, 31, accessed April 06, 2018.

Okay, it is worth mentioning here that the actual quote from Sherman was from his speech after the war to former Union soldiers in Columbus, Ohio, where he said: "There is many a boy here today who looks on war as all glory, but, boys it is all hell." However, the popular condensation, "war is hell," was widely reprinted in Sherman's day, including by the New York Times.

because it opens up the possibility of behaviors in war that are fundamentally inhumane. For example, if it were possible to end a war by capturing and torturing the children of the enemy, I would still maintain that we ought not do it. Unlike the position taken by the second type of realist, I am not a pure consequentialist. Despite the fact that an agent's ultimate intent might be to end suffering by ending a war, that does not justify committing moral atrocities.

So far I have discussed the positions with which I do not agree. I have argued that pacifism is unfeasible for various reasons and that realism is immoral. Both of these arguments are rooted in my earlier agreement with Aquinas that there are moral values rooted in human nature, and that these both permit us to fight wars in their defense while also limiting the circumstances and means of doing so, requiring us to fight war according to moral principles. My exploration of these ideas has been to us back up to the 13th Century, where Aquinas wrote his three conditions for just war, which it is not overstatement to say have set the tone for just war theory in the West ever since. His conditions are: (1) Right authority, (2) right cause, and (3) right intent.¹³ These conditions have formed the basis for much of international law. Further, to Aquinas' credit, they also seem to reflect the values that people held in respect to what was considered just war long before he wrote them. In other words, they seem to codify certain natural human values in the context of war. I, therefore, propose to analyze the new challenges we face in war today in the context of these conditions for just war.

That we are facing new challenges in warfare is not new. It is the nature of war to innovate (indeed war has often been one of the main drivers of innovation) and new

¹³ "Question 40. War," *Summa Theologiae*: War (Secunda Secundae Partis, Q. 40), accessed April 06, 2018, <http://www.newadvent.org/summa/3040.htm>.

weapons technologies frequently bring with them new ethical challenges. Nuclear weapons are perhaps the most obvious example of an ethically challenging technology, but they certainly are not the first. In the 12th Century, at the Second Lateran Council, Pope Innocent II banned crossbows as unethical weapons. In the age of automatic rifles this seems quaint, but it demonstrates that people have long felt uneasy about the creation of deadlier and deadlier weapons. One can quite easily imagine the first caveman to strap a rock to a stick was worriedly grunting to his compatriots about its ethical implications.¹⁴ My point here is to recognize that the dilemma posed by new technology is often overestimated. Still, as P.W. Singer writes in his book, *Wired for War*, “Every so often, however, a change comes along that wipes the table clean. It rewrites the rules, changes the players, and alters the organizations, strategies, and tactics.”¹⁵ To describe this change, Singer introduces the term “revolutions in military affairs,” or simply “RMAs.”¹⁶ Singer argues that RMAs are not particularly uncommon and might include anything from the German tank divisions in World War II to new ways of organizing troops on the battlefield. During the First Gulf War it became apparent to many military officials that an RMA was under way, and by the 2003 invasion of Iraq talk of a ‘new age’ of warfare was buzzing.

A new weapons technology was on the horizon that would change how wars are fought more drastically than anything before it. Robotic warfare, typified by the

¹⁴ "Second Lateran Council (1139)," Under Pope Innocent II - 1139, Article 29, accessed April 06, 2018, <http://www.ewtn.com/library/COUNCILS/LATERAN2.HTM>.

¹⁵ Singer, P.W. *Wired for War: The Robotics Revolution and Conflict in the 21st Century*. New York: Penguin Books, 2009, 181.

¹⁶ *Ibid.*

unmanned aerial drone, would change how wars were fought and it may one day be that they will fundamentally change who is fighting them. The ethical challenges posed by robotic warfare are exceptional. However, we can still look to history to answer questions about how to use these technologies responsibly and the just war tradition is where we should start.

CHAPTER TWO

The Drone

“A robotics revolution is upon us. Now, I need to be clear here. I’m not talking about a revolution where you have to worry about the Governor of California showing up at your door a la the Terminator. When historians look at this period they’re going to conclude that we’re in a different type of revolution: a revolution in war, like the invention of the atomic bomb. But it may be even bigger than that, because our unmanned systems don’t just affect the ‘how’ of war-fighting, they affect the ‘who’ of fighting at its most fundamental level.”¹⁷ - P.W. Singer

Meet the Drone

The United States’ Department of Defense defines a drone as, “a land, sea, or air vehicle that is remotely or automatically controlled.”¹⁸ This definition is worth bearing in mind because the popular image of a drone is limited to something like the MQ-1 Predator – the sleek, futuristic looking robotic plane with a bulbous head that rains down AGM-114 Hellfire missiles from the sky. This is one of the most frequently used models of drones employed on the world’s battlefields, particularly by the United States. Its long range and payload make it ideal for the kinds of counterinsurgency missions in which the U.S. regularly engages. In the midst of these popular images, it is easy to forget that drone technology includes a wide range of robotics technology.

As with most new technologies, there is some ambiguity surrounding the terminology that ought to be employed when discussing “drones.” The military jargon

¹⁷ “P.W. Singer: Military Robots and the Future of War | TED Talk.” Accessed April 22, 2018. <https://www.ted.com/talks/pw-singer-on-robots-of-war>.

¹⁸ Department of Defense, *Dictionary of Military and Associated Terms*, Joint Publication 1-02, August 2011, 109.

usually refers to “unmanned aerial vehicles” (UAVs) or the longer “unmanned combat air vehicles” (UCAVs). These are the terms you will most often hear used in press releases and amongst members of the U.S. armed forces. The term “drone” is typically used to denote an unmanned aerial system, as opposed to ground or naval systems. Other designations, like “military robots” or just “robots” evoke imagery of *The Terminator*, the result of Hollywood’s obsession with robots and combat. For this reason, I will adopt the term “unmanned weapons,” which seems to me to capture the essential and differentiating characteristics of these systems. They are *not* unique in being unmanned tools – traffic lights operate autonomously. And, obviously, they are not unique in being weapons. It is the combination of these two attributes – an instrument that can take life apart from direct human presence – that make unmanned weapons a truly revolutionary technology.

The U.S. employs unmanned ground and naval units regularly and to great effect. The potential for these technologies to save lives by keeping friendly combatants out of harm’s way has proven too alluring for even non-military actors to resist. In 2016, police used a remotely controlled ground unit to kill a U.S. citizen in a standoff with police after a deadly shootout in Dallas, Texas.¹⁹ The concerns this should raise about the use of lethal force in the civilian context are manifold, but that is not my immediate focus. Rather, I want to point out the drastic change this represents in the way we engage in combat. Only a very short time ago, it would have been unimaginable that a citizen could be killed without ever physically confronting the peace officer that killed him or her. In a

¹⁹ Graham, David A. “The Dallas Shooting and the Advent of Killer Police Robots.” *The Atlantic*, July 8, 2016.
<https://www.theatlantic.com/news/archive/2016/07/dallaspolice-robot/490478/>.

matter of decades, the battleground has become virtually unconstrained by space, as Grégoire Chamayou points out in his book *A Theory of the Drone*.²⁰

The fundamental components of this technology are not particularly new, with early unmanned weapons technology consisting of remote controlled planes used for target practice by American artillery trainees as early as the Second World War.²¹ From there, unmanned weapons were developed for use as a surveillance tool, capable of reconnaissance that would have been far too risky to be considered viable with manned systems. Only after the September 11th attacks of 2001 were drones employed as unmanned weapons of war.²² They are capable of killing targets at virtually any distance without ever exposing the operator to bodily harm. It allows the operator to kill with impunity – virtually immune to any immediate consequences. Their precision, though still not perfect by any means, is a massive improvement over anything that has come before them. By most metrics, they are the best weapons that humankind has yet devised.

A Change in Kind

Is the unmanned weapon *just* a better weapon? Daniel Statman, professor of philosophy at the University of Haifa in Israel, argues they are: “Drones are just a tool of war, one among many: There are tanks, cannons, aircrafts, submarines, and now there are

²⁰ Chamayou, Grégoire. *A Theory of the Drone*. Translated by Janet Lloyd. New York: The New Press, 2015.

²¹ *Ibid.*, 26-27.

²² Woods, Chris. “The Story of America’s First Drone Strike in Afghanistan.” *The Atlantic*, May 20, 2015. Accessed April 25, 2018. <https://www.theatlantic.com/international/archive/2015/05/americasfirst-drone-strike-afghanistan/394463/>.

also drones.”²³ In other words, unmanned weapons of war are just another step in the progression of war. In a sense, this is true. One does not need to be a historian to know that human beings have steadily increased the range and lethality of our weaponry. The benefits are obvious: the enemy cannot harm what they cannot reach. Drones, the argument goes, are no different from long-range artillery, missile strikes, or conventional aerial attacks.

The drone is to modern warfare what the crossbow was to the bow-and-arrow and the latter was to the spear. Each new weapon in humankind’s long-growing collection is fundamentally part of a spectrum of increasing lethality. To the extent that distinctions in the means of waging war are simply empirical, those who argue that these developments are merely changes in degree would be right. However, as I shall proceed to argue, these distinctions *are* meaningful in the context of deeply held human values.

An example will help clarify what I mean by distinctions in kind being empirical but still meaningful in the context of human values. An unarmed person can still engage in ‘acts of war;’ she could strangle her opponent, beat them, kick them, or engage in any imaginable form of violent hand-to-hand combat without a weapon. However, we consistently draw a distinction between armed and unarmed individuals on the battlefield. This is a distinction in kind whose basis is a distinction between the hands of the combatant and a ‘real weapon’ – a distinction James Bond and his equals wouldn’t recognize. The distinction here simply draws a line through a range of lethal abilities an agent can possess – a weapon merely being a tool to enhance that lethality. The point is

²³ Statman, Daniel. “Statman: Drones, Robots and the Ethics of War: Ethikundmilitaer.De.” Accessed March 6, 2018. <http://www.ethikundmilitaer.de/en/full-issues/20141drones/statman-drones-robots-and-the-ethics-of-war/>.

that the line denotes a distinction that is intuitive and *meaningful*. Two people are intent on killing: one person has a tool to assist in their killing; the other does not. One person is an armed combatant; the other is an unarmed combatant. The distinction need not be so sharp that the Venn diagram of ‘combatant’ and ‘armed’ contain no overlapping region. Some unarmed people can be combatants; some armed people can be non-combatants.

Yet, this does not mean that there is not a difference in kind between armed and unarmed individuals on the battlefield. There is, and virtually every wartime legal convention acknowledges this difference. For example, in the transcript from a drone strike flown on the 21st of February in 2010, one can hear the drone crew debating whether or not they can engage the individuals they have been tasked with observing. In this case, the distinction between the armed and unarmed is being used to determine whether the individuals on the battlefield can be classified as combatants at all:

00:45 (Pilot): go back to that guy down here

00:45 (MC): See if you can zoom in on that guy, ‘cause he’s kind of like

00:45 (Pilot): what did he just leave there

00:45 (Pilot): is that a *expletive* rifle?

00:45 (Sensor): Maybe just a warm spot from where he was sitting; cant really tell right now, but it does look like an object

00:45 (Pilot) I was hoping we could make a rifle out, never mind

00:45 (Sensor) The only way I’ve ever been able to see a rifle is if they move them

Around, when their holding them [sic], with muzzle flashes out or slinging them across their shoulders

(...)

00:59(Pilot): what about the guy under the north arrow, does it look like he is hold’n something across his chest

00:59 (Sensor): yea it's kind of weird how they all have a cold spot on their chest

00:59 (Pilot): It's what they've been doing here lately, they wrap their *expletive* up in their man dresses so you can't PID [positive identification] it

00:59 (Sensor): yeah, just like that one, there was a shot a couple of weeks ago they were on those guys for hours and never saw them like sling a rifle but pictures we got of them blown up on the ground had all sorts of *expletive*

(...)

03:09 (JAG25): Roger. That's our main interest right now, are these vehicles and where they're heading to. We already know we have PID (radio lost)

03:10 (Sensor): Pretty satisfied on just the weapons calls we made then.

03:10 (Pilot): And Jag 25, Kirk 97. We copied the first half of your transmission. Understand you're focused on the vehicles and have established PID please repeat the rest.

03:10 (JAG25): Kirk 97, that's affirmative, from the weapons we've identified and the demographic of the individuals plus the ICOM.

03:10 (Sensor): Plus the ICOM

03:10 (Pilot): And Kirk 97, good copy on that. We are with you. Our screener updated only one adolescent so that's one double-digit age range. How Copy?

Ultimately, the decision to engage is made based on the positive identification of weapons (tragically, this later turned out to be incorrect).²⁴ One of the primary ways the U.S. military classifies combatants is based on whether or not they are armed. The distinction is significant enough that even children can be classified as combatants if they are seen picking up a rifle. While these classifications can clearly be problematic, I am not arguing that they are meaningless or ought to be abandoned. Rather, it is precisely these kinds of distinctions that are necessary for the chaotic undertaking of war to have any chance at being performed ethically and lawfully.

Unmanned weapons represent a change significant enough to qualify for a meaningful distinction in kind. As I have established, the grounds for these distinctions are based on deeply held human values, and I argue that unmanned weapons technology poses significant and unique challenges to these values. There can be no doubt that unmanned weapons technology affronts our moral intuitions; the slew of popular articles, academic papers, conferences, television and radio programs grappling with the morality of such weapons is evidence enough. They are, at the least, troubling. However, our moral intuitions can be misguided and the power of robotic weapons to *save* lives should

²⁴ Cloud, David S. "Transcripts of U.S. Drone Attack." *latimes.com*. Accessed April 24, 2018. <http://documents.latimes.com/transcript-of-drone-attack/>, (8, 12, 43).

not be discounted. The seriousness of these considerations calls for strong moral motivations if objections to the use of robotic weapons are to be justified. Further, unless one is a pacifist (in which case this paper is moot) these objections must be unique to unmanned weapons, as Statman explains, "...arguments against drones must be powerful enough to explain why they are morally wrong without implying that conventional weapons, the legitimacy of which is universally accepted, are also morally wrong."²⁵

I identify several problems with unmanned weapons that confront our moral intuitions, listed here in what I consider to be the order of their seriousness: the *proximity problem* (a lesser problem), the *boundless battlefield*, and the problem of *transferred agency* (a major problem).

The *proximity problem* I identify as the least concerning of the moral problems with unmanned weapons because it is not, strictly speaking, limited to unmanned weapons. I concede that Statman seems to me correct when he asserts that objections against unmanned weapons need to avoid going overbroad and indicting weaponry already widely viewed as morally permissible. I include proximity as a possible issue because unmanned weapons appear *prima facie* to be the culmination of humankind's quest for increasingly ranged weapons. Since unmanned weapons can be operated from virtually anywhere on the planet, range has simply become a nonfactor in determining where, when, and who to engage. The situation is much like how the hydrogen bomb can be viewed in two ways: either as the far end of a range of "conventional bombs" or as the unique culmination of the quest for destructive power. The fact that the term "conventional bombs" even exists seems to me evidence in favor of the latter view.

²⁵ *Ibid.*, 4.

Unmanned weapons can be viewed as either the far end of a range of ranged weapons or *their* unique culmination, and the unusual level of controversy surrounding their use may be evidence in favor of viewing them as unique. Either way, this problem will be relevant in discussions of the policy effects of unmanned weapons in later chapters.

The second problem, which I term the boundless battlefield, is much more distinctly tied to the rise of unmanned weapons. Here I take some guidance from Grégoire Chamayou, who writes in *A Theory of the Drone*, “with the concept of a “global war against terror,” armed violence has lost its traditional limits: indefinite in time, it is also indefinite in space.”²⁶ He describes the phenomena of “kill boxes,” a concept that allows small areas to be quickly designated conflict zones – thus placing them under the jurisdiction of the rules of war – and just as quickly be re-designated civilian zones. Crucially, “when established, the primary purpose of a kill box is to allow air assets to conduct interdiction against surface targets *without further coordination with the establishing commander* [emphasis added].”²⁷ As Chamayou points out, the kill box essentially allows forces to engage at will for the time the perimeter is established – however long that may be.

Unsurprisingly, this practice arose more or less synchronously with the rise of unmanned weapons. No doubt, in order for such weapons to be used with the greatest possible effect, some such system *needed* to be established. The problem is that the possibility of turning anywhere in the world into a warzone and engaging in it militarily

²⁶ Chamayou, Gregoire. *A Theory of the Drone*. Translated by Janet Lloyd. New York: The New Press, 2015 (52).

²⁷ Air Land Sea Application Center, *Field Manual 3-09.34, Multi-service Tactics, Techniques and Procedures (MTTPs) for Kill Box Employment*, June 13, 2005, I-5.

in a matter of hours – all without leaving Nevada – blurs the line between combat zone and non-combat zone to an alarming degree. When it is possible to make anywhere a combat zone in the time it takes to bake a medium-sized turkey, anywhere may as well be a combat zone.

Admittedly, the *boundless battlefield* problem – while certainly only possible due to very recent technology – is not exclusively the domain of unmanned weapons. The last problem I want to identify, the problem of *transferred agency*, is one we have not had to confront with other weapons systems. The issue I identify is that, just as unmanned weapons are the culmination of ranged weapons systems, they are the beginning of a new type of arms race: the race to transfer the agency of killing. As P.W. Singer writes in *Wired for War*, “the introduction of unmanned systems to the battlefield doesn't change simply how we fight, but for the first time changes who fights at the most fundamental level. It transforms the very agent of war, rather than just its capabilities.”²⁸ This seems slightly overstated. It is true that, while the degree of separation between unmanned weapons operators and their targets is unprecedented, they are still the ones pulling the trigger. In this way, unmanned weapons seem thoroughly conventional. However, it is exactly the trend of increasing degrees of separation (distinct from physical proximity) about which we should worry.

The desire to distance soldiers from combat is both compassionate and pragmatic. The compassionate motivation seeks to shield soldiers from the horrors of war, and on its face this does seem justified. As Jonathan Shay points out in his landmark book *Achilles*

²⁸ Singer, P.W. *Wired for War: The Robotics Revolution and Conflict in the 21st Century*. New York: Penguin Books, 2009, (194).

in Vietnam, soldiers suffering from Post Traumatic Stress Disorder (PTSD) seem to have suffered moral damage – the feeling that their status as moral beings had been negatively impacted by their participation in war.²⁹ Interestingly, various sources suggest that drone crews suffer PTSD at approximately the same rate as their companions in the field. The second, pragmatic motivation is that soldiers with fewer or weaker moral qualms are better fighters. They are less likely to question orders or hesitate to pull the trigger.

It seems only a natural progression to try and fully eliminate the soldier’s agency in war. There are, as we have seen, both compassionate and pragmatic reasons to do so. Thus, we should be grateful that the exponential progress in the field of artificial intelligence (AI) will soon make this possible. Algorithms will be capable of identifying combatants (the U.S. military already utilizes “pattern of life” observations, essentially algorithms for human observers) and they will not require human authorization to pull the trigger. As further evidence that this is the natural next step, it is reasonable to imagine that computers – unencumbered by emotion and stress – will eventually be able to do their job much more efficiently than their human soldier counterparts. We already entrust stoplights with life or death decisions everyday, why not the much more sophisticated technology of unmanned weapons? If this fundamental shift is made, the agency of war will have officially been transferred from soldiers to their weapons. Yet, most people will find this possibility deeply troubling. The question as to why that might be is the subject of the next chapter.

²⁹ Shay, Jonathan. *Achilles in Vietnam: Combat Trauma and the Undoing of Character*. New York. Simon & Schuster, 1995.

CHAPTER THREE

The Problem of Transferred Agency

“It is quite easy to deprive a man of life.
When he is slain he cannot be resuscitated again.
It is a condition of wisdom in the archer to be patient
Because when the arrow leaves the bow it returns no more.” – Sa’di³⁰

“One, a robot may not injure a human being...”- the first of the three fundamental rules of robotics, Isaac Asimov³¹

Defining Agency

The goal of this chapter is to address the problem of agency as it relates to robotic warfare. In the previous chapter, I examined issues that arose in unique relation to robotic warfare. Those were, namely, the problem of the *boundless battlefield* and the problem of *transferred agency*. I concluded that the latter was the more important of the two. I now propose to explore in more depth why that is the case. Towards that end I will first need to address: (1) whether or not agency can, in fact, be transferred to robotic weapons, (2) whether or not agency *has* been transferred to robotic weapons, and (3) if either of these are the case, what are the implications? In order to accomplish this, I will need to define agency in more certain terms. This will be the focus of the first section, with the second section addressing questions (1) and (2), and the third section addressing question (3).

³⁰ Sa’di. “The Internet Classics Archive | The Gulistan of Sa’di.” classics.mit.edu, 1258. <http://classics.mit.edu/Sadi/gulistan.9.viii.html>.

³¹ Asimov, Isaac. “I, Robot.” www.ttu.ee, www.ttu.ee/public/m/mart-murdvee/TechnoPsy/Isaac_Asimov_I_Robot.pdf.

The word agency derives from the Latin *agentia*, meaning “doing.” The Oxford English Dictionary defines it in two ways. First, “[*mass noun*] Action or intervention producing a particular effect. (e.g. ‘*canals carved by the agency of running water*’).” And second, “[*count noun*] A thing or person that acts to produce a particular result. (e.g. ‘*the movies could be an agency moulding the values of the public*’).”³² These primary and secondary definitions go a long way in summarizing the two primary kinds of agency with which one has to contend. The former is non-responsible agency, the latter responsible agency. The “person or thing that acts to produce a particular result” is responsible for the moral implications of those actions. If a movie incites riots we might well hold the moviemaker responsible because she would be the responsible agent. These two distinctions are the most important for the question of agency in unmanned weapons.

Non-responsible agency is defined by an act that produces an effect for which no agent is responsible. Put differently, when lightning strikes a tree and kills it nobody can be held accountable for killing the tree. The lightning has agency, in that it caused an effect – the death of the tree – but it would be nonsensical to attempt to assign agency to the physical-chemical processes that lead to lightning striking the tree. One cannot hold these kinds of processes accountable, nor does there seem to be a reason to try to do so. Our ancestors may once have assigned names to natural phenomena - lightning was the angry god, Zeus, who was hurling down the bolts - and all processes a kind of responsible agency, but that approach no longer seems relevant. Even if a being is responsible for

³² "Agency | Definition of Agency in English by Oxford Dictionaries." Oxford Dictionaries | English. Accessed May 23, 2018. <https://en.oxforddictionaries.com/definition/agency>.

what would otherwise be considered strictly physical-chemical processes there would be no way to hold that being accountable in any meaningful sense.

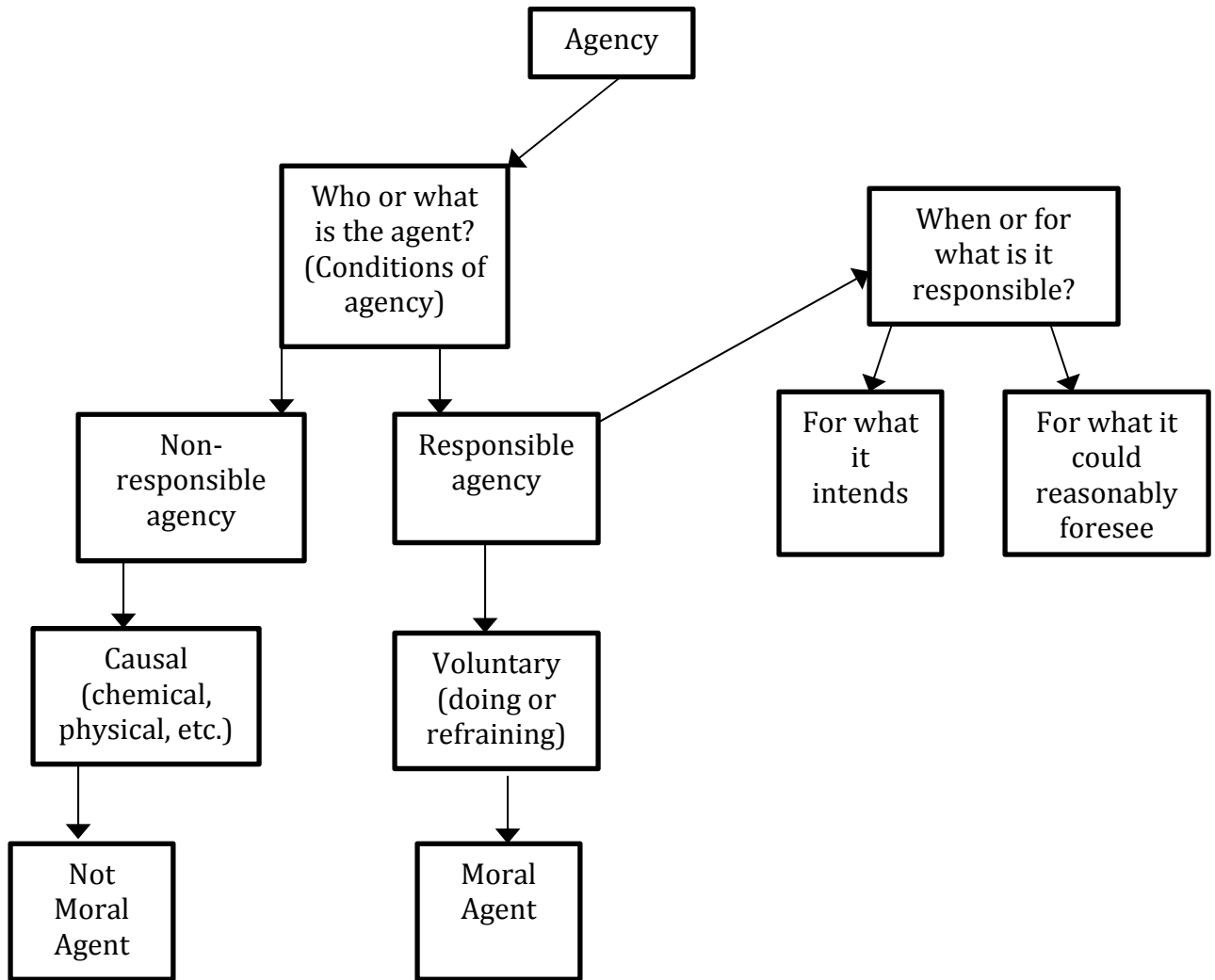
Responsible agency, on the other hand, is defined by an action that produces an effect for which someone *is* responsible. When a person cuts us off in traffic, or plants an IED on the roadside, we assign that person blame for their actions. It is theoretically possible to punish such people, and we may wish to do so for various reasons – deterrence, a sense of retributive justice, preventing a future threat, etc. Responsible agency is that form of agency with which we are most familiar. Non-responsible agency is typically understood to be ‘nature,’ ‘fate,’ ‘luck,’ or any number of things beyond human control, and as such we are likely to intuitively assign it no agency at all. Responsible agents, on the other hand, are the people we deal with on a daily basis and the institutions we attempt to alter or keep the same. We can, by definition, only interact meaningfully with responsible agents.

In the context of warfare, responsible agency tends to take on the additional burden of being synonymous with moral agency. Moral agency must be responsible agency, but not all responsible agency is moral agency. For example, one can imagine a person deciding whether or not to have Earl Grey or English breakfast tea, and that individual would be responsible for his or her choice. While the act of choosing a type of tea is an example of responsible agency, it would seem a bit silly to call that moral agency. Here a distinction particular to moral agency becomes important, namely, the distinction between the intended and unintended consequences of choices made by a responsible agent. A responsible agent is not morally liable for the unintended

consequences of his or her action, only for those intended or which could have been reasonably foreseen.

Because there seems to be such a great number of choices for which the moral consequences cannot be reasonably foreseen, I feel confident in concluding that not all actions taken by a responsible agent are moral actions. However, one may assign moral significance to every action; this is not an untenable position. Perhaps one's choice of tea does have some moral implications. For example, maybe the English breakfast tea is farmed sustainably and purchased ethically from farms that pay their workers fairly, while the Earl Grey is produced on plantations that employ child labor and do not pay workers a fair wage. In this case, it seems possible that there are moral implications to one's choice of tea. However, this is not the same as a responsible agent being morally *liable* for those consequences. If they could not have been reasonably foreseen – imagine that the customer (like most of us) has no idea where the tea comes from – the responsible agent is not morally liable.

To summarize: all agency is not responsible agency; agency must be responsible agency in order to be moral agency; and moral agency can only be assigned to the intended or reasonably foreseeable consequences of an act. To help summarize the relationship between these definitions of agency, a short flow chart is included below.



Transferring Agency

Naturally, the question of agency in the context of this paper regards (1) whether or not moral agency can be transferred to unmanned weapons, and if so, (2) whether or not this has happened in the case of existing unmanned weapons technology. I argue that the answer to question (2) is a firm “no.” There has not been a meaningful transfer of agency to unmanned weapons technology as of yet, at least in the case of the weapons systems known to be in use by the world’s militaries – particularly the United States. However, in

answer to question (1) I answer that yes, moral agency *can* be transferred to unmanned weapons and, further, I argue that this is inevitable as technology progresses. Here I propose a new term: *robotic agents*, to describe robots to whom both responsible and moral agency have been transferred from their human creators to the robotic weapons themselves.

Why are today's unmanned weapons not robotic agents? The simple answer is that today's unmanned weapons – take the MQ-1 Predator drone mentioned in the last chapter, for instance – do not make decisions for themselves. Although such weapons provide an unprecedented degree of separation between the soldier and the enemy, it is ultimately still the soldier who pulls the trigger. This fact is not lost on drone operators, as is revealed in an outstanding interview with Airman First Class Brandon Bryant in 2013.³³ The interview describes Bryant's own sense of having been compromised morally by some of the actions he took as a drone operator. The PTSD he suffered after his six years of service in the Air Force was the result of the immense stress of combat, and a number of studies have found that drone operators suffer from PTSD at a rate similar to their compatriots on the ground.³⁴ That soldiers suffer from PTSD is evidence

³³ Levitas, Matthew Power, Ethan. "Confessions of an American Drone Operator." *GQ*, October 23, 2013. <https://www.gq.com/story/drone-uav-pilot-assassination>.

³⁴ Blaszczak-Boxe, Agata. "Drone Pilots Suffer PTSD Just Like Those in Combat," August 20, 2014. <https://www.livescience.com/47475-drone-operators-develop-ptsd.html>.

Dao, James. "Drone Pilots Found to Get Stress Disorders Much as Those in Combat Do." *The New York Times*, February 22, 2013, sec. U.S. <https://www.nytimes.com/2013/02/23/us/drone-pilots-found-to-get-stress-disorders-much-as-those-in-combat-do.html>.

that moral agency has not been transferred – soldiers are not traumatized by wars they do not fight. Here, Daniel Statman seems correct when he suggests that unmanned weapons are merely a continuation of the development of weapons technology and do not represent a change in kind.³⁵ Where he is wrong is when he states, “What holds true for drones applies, *mutatis mutandis*, to other potentially unmanned platforms.”³⁶ This is only correct so long as those platforms are not autonomous. That robotic agents are coming seems inevitable.

The unmanned weapons on the current battlefield are equipped with what Paul Scharre terms “narrow autonomy,” meaning that these weapons have a level of artificial intelligence that allows them to do things like guide their trajectory or avoid obstacles without input from their human user.³⁷ What is inevitable, Scharre goes on to argue based on interviews with engineers and scientists in the field of unmanned weapons, is that “general autonomy” will become the norm in the next couple of decades – i.e. unmanned weapons will be able to make choices regarding whom to kill and when.

This change will not come all at once but in degrees. That unmanned weapons will be granted increasing “narrow autonomy” until they are deemed sufficiently capable

McCammon, Sarah. “The Warfare May Be Remote But The Trauma Is Real.” NPR.org, April 24, 2017. <https://www.npr.org/2017/04/24/525413427/for-drone-pilots-warfare-may-be-remote-but-the-trauma-is-real>.

³⁵ Statman, Daniel. “Statman: Drones, Robots and the Ethics of War: Ethikundmilitaer.De.” Accessed March 6, 2018. <http://www.ethikundmilitaer.de/en/full-issues/20141-drones/statman-drones-robots-and-the-ethics-of-war/>.

³⁶ *Ibid.*, 1.

³⁷ “When Weapons Can Think for Themselves.” *The Economist*, April 26, 2018. <https://www.economist.com/news/books-and-arts/21741128-paul-scharre-explores-dystopian-prospect-daunting-implications-when-weapons-can>.

of making ‘correct’ decisions about when and how to engage the enemy seems the likely trajectory. Because the change will take place along a spectrum, defining when an unmanned weapon has truly “general autonomy” will require a judgment call of sorts. Where to assign responsible and then moral agency will require another. I do not propose here to solve that problem. Rather, I would merely propose that if we are to confront this difficult issue we must acknowledge two things. First, the day is coming when robotic weapons will become robotic agents. And second, that no robotic agent should be created that does not meet this minimal standard: they must be equal or superior to their human counterparts in making decisions deemed ‘correct’ in the context of combat. This second proposition may seem less intuitive than the first and in the next section I will explore why it is necessary given the problems that arise with robotic agents.

The Problem This Poses

In answer to question (3) – if either (1) or (2) are the case, what are the implications? – I reply that, yes, there are moral issues raised by robotic agents. Further, these moral issues are unique to robotic agents and pose a set of moral dilemmas that has not been dealt with before in practice. It will now only be a relatively short time until these moral dilemmas become problems to be dealt with in the real world. How do we judge the moral or immoral actions taken by a robot? Should we praise or blame, punish or reward a robotic agent in the same way we would a human agent? If so, how? There do not seem to be immediate answers to these questions, and that alone is cause for concern. However, it seems plausible that robotic agents might actually make morally correct choices (in the context of warfare) more often than their human counterparts. Yet, for a number of

people the intuitive reaction to robotic agents in warfare has been to conjure up images of dystopia.

To better understand the situation we face when choosing whether or not to create robotic agents in the first place, let's explore a brief thought experiment:

You are the ruler of a small but largely peaceful state inhabited by moral agents. They can make choices regarding right and wrong and, happily, crime is low enough that the judiciary in your tiny kingdom can deliberate for as long as necessary on the appropriate punishment for those individuals who do commit criminal acts. The judges in your judiciary are of the highest caliber. Having been selected for their moral character and judgment, they are not bound to judge strictly by law as determined by any external legislative body but may judge the accused based purely on the rightness or wrongness of their actions.

In other words, the only mission of the court is to determine the moral status of a responsible agent who has committed a crime. In your kingdom, punishment is regarded as appropriate for a number of reasons, including: deterrence, protection of innocents by removing a threat to society (through imprisonment or death), and because of a belief in retributive justice. However, the problem is that, despite having the best judges and all the resources needed for the justice system to function properly, it is clear that the judges still occasionally make mistakes. This has led to the execution of some innocents, which your society regards as absolutely impermissible. The cause of the misjudgments are widely acknowledged, even by the judges themselves, as the result of the various and inescapable tumults that influence the human condition – emotional stress, unidentified prejudices, misunderstood or insufficient facts, etc.

You are at an impasse as a ruler; the justice system in your state sometimes perpetrates just the kind of injustice your society deems unacceptable! As a solution, your most brilliant scientists devise a solution. They have invented a machine that is capable of making judgments on its own, based on all the same facts available to the existing judges, and using the same criterion for judgment that the judges agree are ideal. Further, the machine can store all the pertinent information with no risk of forgetting anything, misunderstanding it, or otherwise being limited in access to available knowledge. The machine is also unencumbered by emotional turmoil, stress, or prejudice. The scientists have devised the machine so that it needs no outside input from humans once it has been set up; this removes the possibility of human fallibility being involved in the process of judgment. Those on trial will be led to a room, seated in a chair attached to the machine, and left alone. Those who do not meet the determined criterion for guilt will be able to leave the room with no harm done to them. The machine will execute those who do meet the criterion. Do you implement this technology?

This is the question facing us when deciding whether or not to build and employ robotic agents. I anticipate a large number of readers would opt not to use the machine, but most would have a hard time articulating why. There seems to be genuinely good reasons for implementing robotic agents in warfare. Robotic agents will likely be able to make judgments faster, more accurately, and with more consistency than their human counterparts. Further, the processes by which they reason the way to their choices would require no guesswork; it could be understood without a trial or testimony. One would merely need to plug them in and see how the decision was made. Errors could be corrected definitively so that they are not repeated – something that is very difficult to

implement in human agents. The parameters of engagement could be fine-tuned to reduce casualties. The list of potential advantages is a long one, so why do people seem intuitively uncomfortable with the transfer of agency from humans to robots?

The best answer I can pose is that robotic agents, while they may be both responsible and moral agents, cannot be held accountable in the same way as human agents. They could feasibly be blamed or ‘punished,’ but it is unclear what these repercussions would actually mean to a robotic agent. Robots may be able to make decisions on their own in the near future, but it does not seem likely that in the near future they will be able to suffer. The potential for suffering on the part of combatants seems to me to be a crucial part of war. Wars usually end when suffering forces compromise. In the context of robotic warfare, it seems feasible that at least one side would not be subject to suffering at all.

Conclusion

This chapter sought to address: (1) whether or not agency can, in fact, be transferred to robotic weapons, (2) whether or not agency *has* been transferred to robotic weapons, and (3) if either of these are the case, to define the implications. Question (1) was answered in the affirmative; agency can be transferred to robotic weapons, making them robotic agents. However, the answer to question (2) shows that we are still some years away from actually making this transfer complete. Further, defining exactly what qualifies as transferred agency will be a somewhat arbitrary delineation. We need only acknowledge that it will, as some point, exist. The implications of this transfer of agency are addressed in question (3). While there are definitive and articulable advantages to robotic agents in

warfare, the idea provokes a certain degree of uneasiness about its morality. I posit that this is because robots do not suffer, nor are they likely to in the foreseeable future. Suffering is one of the defining characteristics of war, and the fact that robotic agents operate without the ability to experience it raises questions about whether they should be allowed to engage in war at all.

CHAPTER FOUR

Voices of Experience

“Parzival, good lad, stood enraged on that meadow. He clutched at his javelin, and there, where helmet and visor leave a gap above the coif, the missile pierced Ither through the eye and then the nape, so that he who was the negation of all that is perfidious fell dead (...) Had he met his end in chivalrous combat with a lance-thrust through his shield who would then lament a tragedy?”³⁸ – Wolfram Von Eschenbach

The Experience of the Soldier

So far I have grounded modern just war considerations in a framework that has given rise to a number of unique ethical problems regarding the use of unmanned weapons. However, we have only heard a very limited number of voices with experience in contemporary combat using unmanned weapons. Just as physics calculated in a vacuum fails in real-world application, abstract theorizing can only take us so far in a debate about the ethics of war. Instead, we need to hear from the voices of individuals who have directly interacted with these weapons in the context of war. This aids us in fully appreciating the moral complexity of these problems and prevents us from losing sight of the most important consideration – the lives of those affected by war. Towards this end, I have conducted interviews with active and former members of the United States’ Air Force and Army. I engaged them on questions about their opinion of the ethical issues surrounding the use of unmanned weapons (especially unmanned aerial vehicles or UAVs), their experiences using or witnessing these weapons being used in

³⁸ Eschenbach, Wolfram Von. *Parzival*. Translated by A. T. Hatto. Harmondsworth, Middlesex: Penguin Books, 1986, 88-90.

war, and their personal beliefs as to how robotic weapons ought to be used. The goal of this chapter is to bring together earlier discussions and put them in dialogue with the experiences of soldiers and officers. Thus, the questions addressed in previous chapters will be restated in order to get a chance to understand them through the lens of experience.

Setting out to write about the ethical controversies surrounding unmanned weapons is inherently a challenge to the status quo. These weapons are already in use on battlefields around the world. Thus, no survey of the issues would be complete without directly engaging the arguments in favor of their use. I have noted previously that there are a number of ethical motivations for favoring the use of unmanned weapons, which can be summarized well in three parts: (1) Protection – governments and their militaries have a responsibility to protect those who fight on their behalf; (2) Compassion – the experience of the soldier may not have to be as gruesome as in past wars and if it is possible to distance them from the horrors of combat, we should; (3) Moral precision – in the eventuality that robotic weapons become more capable of ethical decision making than humans, unencumbered as they are by things like emotion and imperfect recall, it might be best to allow them to decide who should and should not be killed in wartime. The only way to properly evaluate the moral weight we ought to assign each of these ethical considerations is with the help of those who carry the weight of their reality in war.

The protection argument relies on the basic ethical principle that militaries have the responsibility not to expose their soldiers to more danger than is necessary for the realization of tactical and strategic objectives. Certainly, this necessary level of danger

can be lethal. This is not an argument that militaries cannot allow their soldiers to suffer injury or die, only that they must not do so if there is a reasonable and foreseeable alternative. In other words, soldiers should not to suffer or die in vain. This duty is taken seriously by officers, many of whom consider themselves personally, as well as formally and legally, responsible for the lives and welfare of those under their command.

I interviewed retired Lieutenant General Rick Lynch, a 1977 graduate of West Point with thirty-five years of experience serving in the U.S. Army. In his own words, “I’m very attuned to the issues with unmanned systems, both ground and air. I had four years in Iraq. On one of those tours in Iraq, I actually commanded 25,000 soldiers on the battlefields in Iraq in the worst parts of Iraq” (3:34). When I broached the issue of whether or not he thought there were legitimate ethical concerns with the use of robotic weapons, he responded with a story. “During that time,” Gen. Lynch said, referring to his tour in Iraq, “153 soldiers died on the battlefield on a place that I placed them. And 800 more came back in pieces, you know, they lost the arms, or legs, or came back with invisible wounds. So, to me, this is all a passion” (3:34). Discussing his career in military contracting after he retired from military leadership, Gen. Lynch said, “[UAVs] were in my formations. And we used them to some effect. And now I’m trying real hard throughout the military to get unmanned ground systems on the battlefield because of those 153 soldiers, who died on my – under my command, eighty percent didn’t need to die. They could have been replaced by unmanned ground vehicles” (4:38).

Throughout our conversation, he expressed the desire to see UAVs used with greater frequency for a variety of reasons. The protection of soldiers under his command remained far and away the most important. These weapons are capable of protecting both

the soldier on the ground in combat and the operator who would otherwise be exposed to risk in a conventional aircraft. It is easy to see how commanders would feel they have an ethical commitment to employ UAVs – and other robotic weapons – when experience shows them to be effective at protecting the men and women under their command. In the absence of arguments that convincingly demonstrate the harm done by using robotic weapons is morally weightier than the fiduciary commitment of a commander to those under his or her command, this alone would seem to justify the use of robotic weapons. I argued in Chapter 3 that the problem of transferred agency may be such an argument but cannot conclude that this is definitively the case. Here too Gen. Lynch offers some insight, but more on that later.

Similarly, the compassion argument is also rooted in a commitment to the soldier. To quote Gen. Lynch, “nobody hates war more than the soldier because we're the ones that got to go fight it” (05:50). Or, as the aforementioned quote from Sherman so succinctly puts it, “War is hell.” This fact does not seem to change in the case of UAV operators. Various studies have shown high rates of PTSD in the U.S. Military amongst drone pilots, specifically. Consider my conversation with Maj. Jordan of the U.S. Air Force. Maj. Jordan has over four thousand hours of flight time piloting MQ-9 Predator UAVs and now trains new pilots for the Air Force. His last name has been omitted out of consideration for his active duty status. Our discussion turned to the difficulties of life as a combat pilot and – far from the popular conception of a ‘drone’ operator far removed from the trauma and moral difficulties of the battlefield – Maj. Jordan painted a picture of a far more nuanced experience. “You make life and death decisions every day when you

go to work,” he explained, “...and after a certain amount of time, that it, it drains on you, right?” (1:30:24). Yet, this is not the end of the story.

Maj. Jordan also wanted to be sure I understood that UAVs – and the procedures that currently guide their use – offer the combatant a peace of mind that might otherwise be unavailable. Fighting a war is always morally difficult, but “for all the reasons we spoke to earlier. Uh. When you pull the trigger, you, you know you're, you've identified the correct target and you've mitigated the risk, um, because of that tactical patience” (1:30:37). The “tactical patience” Maj. Jordan is referring to is the ability of the U.S. Air Force to delay engaging until they are satisfied that they have met the necessary parameters to fulfill the rigorous requirements of the Judge Advocate Office. As Randy Martin, an official spokesperson for the U.S. Air Force, told me during our interview, “you just can't make decisions as a commander without consulting your JA” (46:29). This office is responsible for ensuring strict adherence to U.S. Air Force rules of engagement. Maj. Jordan contrasts the “tactical patience” available to pilots of UAVs with the tactics employed by pilots of traditional aircraft, describing a likely scenario: “So think of a fighter guy; he's almost out of gas. He's like, ‘My guys are in trouble. I gotta make this work 'cause I gotta to home.’ Where we have the ability to stay on station and like, okay, we're gonna wait until the situation develops to where it's lower risk” (1:24:16). At least compared to traditional aircraft, UAVs seem to have strong tactical advantages that translate into more consistently ethical engagement.

This has significant implications for the compassion argument. Although the previously cited research does seem to suggest that UAVs are not truly capable of shielding soldiers from the stress and horror of combat, they are capable of relieving

some of the moral difficulty. As Maj. Jordan told me with grave sincerity, “I've flown in MQ-9s for about seven years and I'm very proud of this. I've never, uh, killed anybody but the intended target. And I'm very, very proud of that. And I've gone through excruciating lengths to prevent civilian casualties” (1:24:48). This does not negate his previous statement about the draining nature of making life and death decisions, but it does help eliminate moral ambiguity. The consequences of one's actions are more likely to align with one's intent, decreasing the likelihood that soldiers will be forced to endure the moral burden of taking unintended lives. This is no small feat and should be considered a meaningful argument in favor of employing remotely piloted weapons provided robust rules of engagement are followed.

This leads directly into the moral precision argument. If we accept the premise that shielding combatants from the moral burden of killing – especially unintended killing or ‘collateral damage’ – is a good thing, then the next logical step is to grant that technological advances that further distance soldiers from life and death decision making are a good thing. Yet, as we discussed in the thought experiment in Chapter 3, this is not clearly the case.

That thought experiment is designed to show that there is an intuitive difficulty with granting weapons the autonomy to make life or death decisions. The difficulty is that increased autonomy seems to be the logical extension of the protection and compassion arguments. A robotic weapon with full or nearly full autonomy would be able to completely remove soldiers from physical harm and prevent psychological and moral harm.

This is the moral precision argument, which relies on the assumption that robotic weapons may one day be better suited to ethical decision making than their human counterparts. I posed this question to Gen. Lynch, asking him what he thought would be the ethically correct course of action given the scenario that future robotic weapons are shown to be able to handle themselves in war better than their human counterparts. He answered unequivocally, “I can never see the leaders of the US military accepting some purely autonomous system out on a battlefield, making life or death decisions. I can never see that” (10:59). Gen. Lynch went on to elaborate that he did not think this was simply because of technological limitations or the gut reactions of the military top brass. Rather, he can never see autonomous systems being implemented, “even if the technology allows that to happen *because we're talking about humanity here*. We're talking about making life and death decisions that affect both the bad guys and the good guys” (11:11, emphasis my own). There is a moral intuition that indicates that life or death decisions are a human responsibility.

The Moral Weight of Experience

The consensus that robotic weapons ought not to have the autonomy to make life or death decisions seems nearly universal amongst the service members whom I interviewed. The difficulty is in explaining why this should be the case. According to my framework, intuition alone is not a strong enough reason to draw conclusions about moral truths. Yet, I have not resolved why the problem of transferred agency ought to be a problem at all. Autonomous weapons could protect soldiers, would be the compassionate way to wage war, and may well be more morally precise. Acknowledging this difficulty,

I argue that we ought to grant exceptional weight to moral judgment based on experience in ethically charged, ambiguous, and profoundly challenging contexts.

In this case, that would mean deferring to the moral judgment of those who have lived through the experience of war. My sample suggests that soldiers, like laypeople, are deeply disturbed by the idea that agency might be transferred to robotic weapons. This is the case even when the question is posed with the same parameters as the thought experiment in Chapter 3 – that is, we are guaranteed that the algorithms governing the behavior of the robotic weapon will make the ethically correct decision, as we have defined it, more often than a human could. Gen. Lynch aptly compared the situation to that of so-called driverless cars in the United States and the issue of how to litigate deaths caused by accidents. The technology is already good enough for driverless cars to be on the roads and operate as well or better than human drivers, but fatalities still happen. In the opinion of Gen. Lynch, there is public backlash against allowing these vehicles to make their own decisions, “because we, as humans, we just don't want to allow machines to determine who's going to live and who's going to die” (11:58). Although the technology is still new and has only been in the public eye for a short time, this seems to be true.

What then are we to conclude about the problem of transferred agency, and by extension the moral precision arguments, if the consensus from those who use unmanned weapons is that they should not have the capability to make life or death decisions? I argue we must conclude that they are correct. At the very least, in the absence of a clear consensus those with experience in war ought to be the arbiters. For example, the question of whether or not unmanned weapons actually influence soldiers' ethical

decision making is one that cannot be fully answered without reference to the experience and reflective consciousness of the soldiers themselves. Further, as discussed in Chapter 1, the entire basis for a moral realist approach to warfare is based on the collective experience of human history. It is through experience that we have learned to constrain war with rules and it is through experience that we must learn to address the ethical difficulties surrounding the use of UAVs and other robotic weapons.

Conclusion

In short, whenever possible ethical decision-making should be informed by the voice of experience. I posit that experience has largely shown us that distancing ourselves from the battlefield has a number of advantages. Besides the clear strategic advantages, there are the ethical advantages as represented by the protection, compassion, and moral precision arguments. These advantages make a strong case for the continued use of unmanned weapons on today's battlefields. However, this only remains true granted the presence of the carefully defined rules and procedures that prevent these weapons from being used wrongly. In this way, unmanned weapons do not differ from their traditional counterparts in anything but their power. This was addressed in Chapter 2, which considered whether or not unmanned weapons represented a true change in kind from previous weapons. I conclude that they do not, barring the transfer of moral agency from the soldier to the machine. In Chapter 3, I considered this question further using a thought experiment and concluded that giving unmanned weapons agency (making them robotic agents) would, in fact, represent a change in kind and would constitute a novel ethical problem.

All of this relies on the argument that there is a right way to wage war at all. In Chapter 1, I ground the ethics of war in collective human experience. The long tradition of just war theory – from Augustine and Aquinas to the present age – is founded on the collective human revulsion at the horrors of war (even where some philosophers, like the two aforementioned, might claim to draw on an external source of moral guidance).

This has significant implications for how we approach the ethics of just war today. I argue the most important of these is that we look to voices of experience when determining our policies with regards to war – including the use of unmanned weapons. There is a place for careful philosophical reflection. I would not have undertaken the preceding pages if I did not think so. However, it is crucial that reflection not be that of monks cloistered and set apart from the world but rather engaged and present in it. This means engaging with those who have been to war and used the weapons up for debate.

In short, unmanned weapons are ethically permissible in their current form. Further than that, they are ethically preferable to many of their more traditional counterparts. This is all said with the caveat that moral agency – the power over life and death decisions – ought not be transferred to unmanned weapons. Or, as I term it, we ought never create robotic agents for use in war. This argument is tempered by the voices of soldiers who have experience using these weapons in war and whose voices are of paramount importance to all ethical debates about war.

APPENDICES

APPENDIX A

Interview with Randy Martin and Maj. Jordan

Interview Transcripts

I conducted the following interviews with an official spokesperson for the U.S. Air Force, Mr. Randy Martin, a retired Lieutenant General for the U.S. Army, Rick Lynch, and an active duty officer for the U.S. Air Force, Maj. Jordan, whose last name has been omitted in consideration of his active duty status. All of these individuals have graciously agreed to let me publish their interviews as part of my undergraduate thesis.

7 September 2018, Randolph Joint Air Force Base, San Antonio

| | | |
|---------------|-----------------|---|
| Maj. Jordan: | <u>00:00:00</u> | ... help you at least get it, um, carefully, um, helping or steer you in the right direction. But- |
| Gostomski: | <u>00:00:06</u> | And I under that neither of you necessarily have to speak on the behalf of the entire military and I don't know what exactly the procedures are for that. Um. |
| Maj. Jordan: | <u>00:00:14</u> | Right. Everything we say is just our personal opinion. It does not reflect the opinion of the Air Force. |
| Randy Martin: | <u>00:00:18</u> | Um. Well for, for me, I'm a, as in my job, I'm an official spokesperson- |
| Gostomski: | <u>00:00:25</u> | Okay. |
| Randy Martin: | <u>00:00:25</u> | ... for the U.S. Air Force. So. Um. I can't, I'm not really giving you anything right now that's off the record. |
| Gostomski: | <u>00:00:30</u> | Yeah. I totally understand. |

Randy Martin: 00:00:31 He-

Gostomski: 00:00:32 Would you mind both stating your names? This is just, I don't, in case I do quote you, I want you-

Maj. Jordan: 00:00:35 Sure. Yeah. Major [Jordan] [REDACTED]. And I'd prefer that you only used the first name for the record.

Gostomski: 00:00:42 Absolutely.

Randy Martin: 00:00:43 The reason for that is, uh, by our own, um, our own conditions, he is, because he's in that, he's in that world of, of intelligence, surveillance, reconnaissance operations right now. In fact, he is in, in the fight right now.

Gostomski: 00:00:58 Absolutely.

Randy Martin: 00:00:58 Right here. Um. My name is Randy Martin. I'm the Public Affairs Chief for the 12th Flying Train Wing here at Joint Base San Antonio Randolph.

Gostomski: 00:01:07 Okay. And it's the seventh of September. Just for the record.

Randy Martin: 00:01:10 Correct.

Randy Martin: 00:01:11 Alright. So and what we're looking at here, of course, is the Joint Publications Library.

Gostomski: 00:01:16 Right.

Randy Martin: 00:01:16 And I'm showing you a document that I've, uh, that is ... Let's see if I can get back to the very first page. This is called Joint Publication 1-04 Legal Support to Military Operations. And this document should be discoverable on, uh, on the, uh, on the internet through the Joint Publications Library. Um. And you can see it's not a, it's not a CAC-enabled, uh, website that you wouldn't be able to get to.

Randy Martin: 00:01:45 So all this is, all this information is already public domain.

Gostomski: 00:01:49 Right.

Randy Martin: 00:01:49 You're not being provided any information that's exclusive.

Gostomski: 00:01:52 Sure.

Randy Martin: 00:01:52 This is entirely, entirely available to, to everyone.

Gostomski: 00:01:56 Absolutely.

Randy Martin: 00:01:56 Um. But I, in your, in your, your project is, is going to, uh, not just ... I mean, you're, you're addressing political aspects.

Gostomski: 00:02:10 Sure.

Randy Martin: 00:02:11 You're addressing psychological aspects. And you're talking also about tactical weapons and strategic weapons and operational weapons and everything in between. Um.

Randy Martin: 00:02:21 And so, I think Major [Jordan] █████ certainly is an expert on the employment of, uh, remotely piloted aircraft, he's done that. Um. And he teaches others how to do that.

Gostomski: 00:02:34 Okay. Okay.

Randy Martin: 00:02:35 Um. The ... Sorry. What was ... Where were we? What was our question that we were going to?

Gostomski: 00:02:44 Oh. I believe ... So before, we were talking about, um ... So my, my interest, because of the U.S. military does have, um, open-sourced codes of ethics-

Randy Martin: 00:02:51 Yeah.

Gostomski: 00:02:51 ... that are, are wildly available. My concern is more broadly what the ethical implications would be of, uh, unmanned systems being used, you know, no adhering to those codes of ethics. Maybe by, um, our enemies, or just by other nations in general [crosstalk 00:03:05].

Randy Martin: 00:03:05 So I, the United States, um, is a signer of a whole body of law in, that, that is government's, um,

warfare. And so you, you had have to, um ... You would have to, uh, research all of the, the documentation.

Randy Martin: 00:03:26 Our doctrine, uh, supports the, uh, treaties and laws that we are signed, signatories of.

Gostomski: 00:03:33 Right.

Randy Martin: 00:03:34 And so that's one of the reasons why I pointed out to you earlier, the tenants of what we call, um, either the Law of Armed Conflict or the Law of Land Warfare.

Gostomski: 00:03:42 Okay.

Randy Martin: 00:03:43 And so you're correct that, um, our enemies are, and have never necessarily have been held to the same levels of, um, integrity that, that we have strived for. Um. And uh, and that's kind of makes us American.

Gostomski: 00:04:02 Right.

Randy Martin: 00:04:03 Honestly. Um. So we, we know, and it is open sourced, that uh, the enemy has used, um, uh, weapons that, uh, you would call, or we would call remotely piloted aircraft. Um.

Randy Martin: 00:04:21 In, uh, throughout, um, what is, uh, the middle or throughout the Middle East, um, and all of the, uh, theaters we're currently engaged, but that's way above my and, uh, Major [Jordan] [REDACTED]'s level of immediate knowledge.

Gostomski: 00:04:38 Right. I understand.

Maj. Jordan: 00:04:40 Sam, I would offer up, um, a historical example of the progression. Project Aphrodite. Have you heard of that-

Gostomski: 00:04:48 I have not. No, sir.

Maj. Jordan: 00:04:50 ... before? It's a interesting, uh, operation that was completed in World War II. And what they did was take old, dilapidated airplanes-

Gostomski: 00:05:04 Okay.

Maj. Jordan: 00:05:04 ... stripped them of everything they could. Load them up with explosives.

Gostomski: 00:05:09 Hmm.

Maj. Jordan: 00:05:10 Uh. And then remotely flew them into targets.

Gostomski: 00:05:14 That's very interesting. I did not know about that.

Maj. Jordan: 00:05:16 Um. And they used, uh, in particular B-17s and their targets were the V-2 rockets, which were heavily defended.

Gostomski: 00:05:26 Okay.

Maj. Jordan: 00:05:27 And so you needed a large explosion to destroy those facilities and Project Aphrodite was an effort to, to meet that objective.

Gostomski: 00:05:38 Sure thing. Wow. That's interesting.

Maj. Jordan: 00:05:40 And a little known fact, um, I believe it was Joe Kennedy, who was actually killed in, uh, Project Aphrodite.

Gostomski: 00:05:48 Wow. I was not aware of that. Hmm.

Maj. Jordan: 00:05:49 Yeah.

Gostomski: 00:05:51 That's interesting. That had never come up actually when I was, when I was researching the beginning of unmanned systems or anything like that either. So.

Randy Martin: 00:05:57 If you walk him through, if you could, you'll be walking through, um, Hanger Six, um, in-

Maj. Jordan: 00:06:05 Okay.

Randy Martin: 00:06:06 ... midway down the hallway after you enter that side of the building, there's some photographs from Aphrodite and the use of, um-

Maj. Jordan: 00:06:15 Hanger Six is in the back is in the back?

Randy Martin: 00:06:16 No. I'm sorry. It's Hanger 12. Hanger 12. That's where the 50 or 560th is at.

Maj. Jordan: 00:06:19 Oh. The 560th?

Randy Martin: 00:06:20 Yeah.

Maj. Jordan: 00:06:20 Okay.

Randy Martin: 00:06:20 So if you walked in that side of the building, their side of the building-

Maj. Jordan: 00:06:24 Yeah.

Randy Martin: 00:06:24 ... You know where they're at, right?

Maj. Jordan: 00:06:25 Um hmm (affirmative).

Randy Martin: 00:06:25 And you went midway down the hall, there's some pictures on the wall down there.

Randy Martin: 00:06:28 It was, you know, you know, it, um, and, and we certainly can't speak, speak for Nazi Germany, however-

Gostomski: 00:06:36 Right.

Randy Martin: 00:06:36 ... um, Nazi Germany of course, was employing, uh, their, the wonder weapons they called them. Um. At the end of World War II, they were, um, using V-1 and V-2 rockets and they, and those were just rockets. Mindless rockets. They would fire indiscriminately in a general direction of the enemy and cause terror. Um. That is certainly not what we do on a daily basis, uh, now throughout the world with our remote-piloted aircraft.

Gostomski: 00:07:06 Right.

Gostomski: 00:07:06 I was gonna say you made the distinction there between like the unguided, uh, missile systems that would have been used by the Nazis and the now more guided, targeted systems that we use today.

Maj. Jordan: 00:07:18 Right. It's becoming more and more precise-

Gostomski: 00:07:19 Right. You're absolutely right.

Maj. Jordan: 00:07:20 ... as we progress.

Gostomski: 00:07:21 That's actually something ... Sorry [inaudible 00:07:23]

Randy Martin: 00:07:23 So ... Well just add to, to, to kind of give you an idea, very generally here, um, they're, they're is, when, when a weapon's system is employed by the United States, those tenants that I pointed out to you earlier ... I don't really want this ... okay ... um ... require, uh, some sort of observation on a, a target. Um. So whether it was the, the raid on, uh, bin Laden's caves, uh, uh, prior to, um, 9/11, uh, or it's a modern day operation somewhere in the mountains of Afghanistan, there's observation. There's a weapons system.

Gostomski: 00:08:07 Right.

Randy Martin: 00:08:07 And, and a human being that is in the chain, um, making decisions about where and when to, to use that weapons system. And, and our, uh, leaders, our government are held accountable by the American people for, um, uh, the integrity of the decisions that are made, uh, by people like, um, Major [Jordan] [REDACTED]. And if Major [Jordan] [REDACTED] were to make it, a decision that were outside of those, uh, requirements, he could in fact, be held accountable in our justice system.

Gostomski: 00:08:47 Right.

Randy Martin: 00:08:47 We'll show you a couple of, of things here that might help inform you of, of, of that in a little bit.

Randy Martin: 00:08:53 How much more time do you have today?

Gostomski: 00:08:54 I have as much time as you gentlemen need. I can go back to Waco at any point. I'm just gonna shoot right back up I-35. So.

Maj. Jordan: 00:09:00 Oh. You're not staying in, in town?

Gostomski: 00:09:02 No. I had planned to but, um, I have limited gas money and it's, I live an hour the other way. So.

Maj. Jordan: 00:09:08 (laughing)

Gostomski: 00:09:08 I'm here. (laughs) I shoot right back up I-35.

Gostomski: 00:09:10 Actually, two very interesting things you gentlemen both brought up actually, that, um, I talk about in my thesis and one of them is precision. Um. That comparison you made between, uh, uh, kind of these indiscriminate rocket systems, what were used on World War II and what we do now.

Gostomski: 00:09:24 And something that is not focused on enough in the media is, uh, potentially the ethical benefits of these kinds of weapons and the enhanced precision that they have. You potentially can eliminate, um, you know, uh, civilian casualties and these kinds of things, uh, or at least decrease them with enhanced precision.

Maj. Jordan: 00:09:43 Right.

Gostomski: 00:09:43 Um. So that's one thing. I wonder if you guys have anything else you'd like to say about, um, that?

Gostomski: 00:09:49 And then also I was interested in, you brought up human in the chain of command. And I think that's been one thing that has been ... This is more of a, a future problem and so this is completely conjecture. But, um, people have brought up the possibility that artificial intelligence might be more capable than humans of, of making ethical decisions quickly, um, and rationally. The question there, of course, is the question of accountability that you brought up. Um. And, so that's something I wonder if you have anything else you'd like to say about?

Randy Martin: 00:10:20 I don't know if we're, we are, we're not necessarily experts on, on that. Uh.

Gostomski: 00:10:24 I totally understand [crosstalk 00:10:26].

Maj. Jordan: 00:10:26 I, I can give just a general idea. The, the two things that, uh, remotely piloted aircraft are really good at is the precision-

Gostomski: 00:10:35 Right.

Maj. Jordan: 00:10:36 ... you talked about, um, but also the surveillance. Um. And making sure that we've identified the correct target.

Gostomski: 00:10:42 Okay.

Maj. Jordan: 00:10:42 Um. And we, uh, are better, uh, than we have been in the past.

Gostomski: 00:10:46 Right.

Maj. Jordan: 00:10:47 As the technology advances, you get better sensors, better cameras. You know, you're better able to discern and, uh, identify targets. Um. And-

Gostomski: 00:10:57 Absolutely.

Maj. Jordan: 00:10:58 ... and mitigate the risk.

Gostomski: 00:11:00 Right. Right. Absolutely. And I think, I think certainly based on the things I've read, we're better at that now, without knowing what happened in the past obviously. Mistakes we had made [inaudible 00:11:09] that kind of thing, I understand. But, um-

Maj. Jordan: 00:11:11 Right.

Gostomski: 00:11:12 Um. I mean, would you say generally, in your opinion, um, that would become, uh ... well we have come a long way in our ability to identify targets and that sort of thing?

Maj. Jordan: 00:11:22 We have, we have, we have come a long way. Uh. In technology advances, if you, you get better at, uh, avoiding risk.

Gostomski: 00:11:30 Absolutely.

Gostomski: 00:11:30 And you may not be able to comment on this, but as far as, um, accountability, um, in the future, if, if in

your opinion, if, uh, maybe artificial intelligence systems, algorithms were better, proven to be better at making ethical decisions [inaudible 00:11:47] humans, do you have an opinion on, on what that would look like in the future? Um. [crosstalk 00:11:53]

Maj. Jordan: 00:11:52 To be honest, I don't. I just doing know what it's gonna look like.

Gostomski: 00:11:55 Right.

Maj. Jordan: 00:11:55 Um. What the details are, [inaudible 00:11:58] details in artificial intelligence. How we're gonna to incorporate artificial intelligence into warfare. Um. So it's, it's tough to figure out exactly-

Gostomski: 00:12:08 Sure.

Maj. Jordan: 00:12:08 ... the ideas of it. I mean, right now it's kind of all theory.

Gostomski: 00:12:11 Absolutely. Yeah.

Maj. Jordan: 00:12:11 Um.

Gostomski: 00:12:13 [inaudible 00:12:13] I understand that I'm asking you to conjecture about things.

Maj. Jordan: 00:12:15 Right. Exactly.

Gostomski: 00:12:16 Are, are definitely not concrete. So.

Maj. Jordan: 00:12:18 The, uh, but there, there's, uh, a very well established process for the, the, from the time you, uh, identify something 'til the time you, you shoot the missile.

Gostomski: 00:12:29 Right.

Maj. Jordan: 00:12:29 Um. And, and there's a strong chain of command. And that chain of command is in there for a reason.

Gostomski: 00:12:34 Right.

Maj. Jordan: 00:12:34 To prevent the mistakes. So any point and time, somebody can say stop. And, and I've had that happen before where that 18-year-old, enlisted Sense Rucker, the guy that's driving the camera said, "That doesn't look right. Stop." And we did.

Gostomski: 00:12:49 Okay.

Maj. Jordan: 00:12:49 And we saved lives, um-

Gostomski: 00:12:51 Absolutely.

Maj. Jordan: 00:12:52 ... anybody in that chain can say stop.

Gostomski: 00:12:56 Is there any way, um, that, I understand this kind of thing may be confidential, but is there documentation that allows like a civilian to understand what that chain of command looks like? Um, because, so I've read some stuff that I believe personally to be inaccurate, um, in magazines, for instance. I know GQ-

Maj. Jordan: 00:13:13 Sure.

Gostomski: 00:13:13 ... did a really big piece at one point. It was in interview with a retired, enlisted drone operator. That I think, based on what you just told me and some other stuff that I've read, um, it seems may inaccurately represent that chain of command. People saying that it's like, oh, you know they're required to, to, to fire on enemies. [inaudible 00:13:31] they're convinced that they're, you know, incorrectly identified targets and that sort of thing. Um, but, it does sound like there's a, there is a pretty rigorous process there.

Gostomski: 00:13:42 But, so do you know if there's anything that's open to civilians to look at?

Maj. Jordan: 00:13:46 Um. No, not per se. Um. But just understand that because we're connected, um, we can bring those experts-

Gostomski: 00:13:55 Sure.

Maj. Jordan: 00:13:56 ... from military experts to civilian experts-

Gostomski: 00:13:59 Right.

Maj. Jordan: 00:14:00 ... um, into that decision-making process. Uh.

Gostomski: 00:14:02 Okay.

Maj. Jordan: 00:14:02 And, and make sure, make sure that, uh, we, we're making the correct decision.

Gostomski: 00:14:10 Okay. Absolutely.

Randy Martin: 00:14:11 They, the ... A term that we use, correct me if I'm wrong, Joker, um, targeting the process. And so, if I give you ... I'm gonna, maybe I'll give you tags from, once in a while, and that's one of them.

Gostomski: 00:14:25 Sure thing.

Randy Martin: 00:14:25 Targeting the process. Um. And that's what he really is concerned with.

Maj. Jordan: 00:14:33 Um hmm (affirmative).

Randy Martin: 00:14:34 Um. It's, I'm just looking through right now the Command and Control Joint Air Operations-

Gostomski: 00:14:43 Okay.

Randy Martin: 00:14:43 ... February 2014, signed by, um, the current Chief of Staff of the Air Force. Um. Joint Targeting. Let's see [inaudible 00:15:02] 15 ... Yeah. And this walks all through that. Um. Targeting is process of selecting the prior [inaudible 00:15:23] targets and matching the appropriate response to them, considering operational requirements and capabilities. Targets at both the joint and component level function ... I realize a lot of this stuff here is doctrinal there to you.

Gostomski: 00:15:34 Yeah.

Randy Martin: 00:15:34 But it makes sense to us. Um. It talks about, um, being deliberate. Um. It gives functions of different, um, elements. On the battlefield, the ... For example, uh, The Joint Targeting Coordination Board, which is a organization, um, at the first level

of a Joint Command. So, um, there, there will be a group of people who will sit and, and deliberately look at a, a target and make decisions about whether the target is to be engaged or, um, made incapable of operating-

- Gostomski: 00:16:23 Um hmm (affirmative).
- Randy Martin: 00:16:24 ... uh, eliminated or otherwise. And they, they will walk through the different effects they want to create for a specific target and then it will be racked and stacked with all of the other priorities and weapons systems will be used, whether it's the weapons systems that he might be on, he might operate, or something on the ground that is maybe more, um, more specialized, or the use of Special Operations Forces. All of, all of that is taken into account through, through that doctrine.
- Gostomski: 00:16:58 Right. Right.
- Randy Martin: 00:16:58 If you wanted to get to that whole tactical level ... Joker, you want, you could tell him that certainly, right?
- Maj. Jordan: 00:17:05 If, for the-
- Randy Martin: 00:17:06 The tactical piece.
- Maj. Jordan: 00:17:09 In what regard?
- Randy Martin: 00:17:10 Well, the, in regard to ... Paint for him the picture of the elements that are, were at work in the example you gave a couple minutes ago. You talked about yourself and the crew member, the basic sensor, or the sensor operator, in Nellis, but then you, but you know there was the air, aircraft, um, that had to be launched from somewhere forward. There was, there is a tactical control team somewhere on the ground near the target that was talking to you, um, directly or indirectly. Um. And then there was another party out there as well, who was controlling the airspace.
- Maj. Jordan: 00:17:46 Yeah. Um. I guess the biggest point I want to try to make, and I think try and stick in broad terms, is

think of, think back to World War II, uh, where a fighter would launch with an intent and a target, um, to go after. Somewhere along the way there might be a target of opportunity that came up. It was, he was the only one making the decision on engagement.

- Gostomski: 00:18:12 Right.
- Maj. Jordan: 00:18:12 Because he's by himself.
- Maj. Jordan: 00:18:14 Now we have the ability to have network and those team of experts surround us-
- Gostomski: 00:18:19 Right.
- Maj. Jordan: 00:18:19 ... um, to help us, uh, to make those informed, correct decisions. Uh. So that the biggest pieces are the precision, the, there's surveillance, uh, the technology of the better cameras, and the team behind you, uh, because you are connected.
- Gostomski: 00:18:37 Okay. Right.
- Gostomski: 00:18:38 Do you, um, do you think, um, that potentially the additional scrutiny that seems to be applied to, um, um, unmanned weapons systems could potentially be due to the fact that, um, more scrutiny is possible now because of, 'cause of their connection? So um, going back to your World War II example, if you're a pilot who has to make these kind of decisions about where to drop a bomb, um, on your own without direct contact with, uh, teams on the ground or, or backup. Um. Largely that information stays with you to an extent, I suppose. Um. The decision making process at least is in your own head, uh, based on your own training.
- Gostomski: 00:19:19 And now today, obviously a lot of that stuff is recorded. There's transcripts of all of these things.
- Maj. Jordan: 00:19:23 Yeah.
- Gostomski: 00:19:24 Um. So would you, do you think that the additional scrutiny that seems to be applied to this kind of, of

warfare is just kind of a function of that being available, or what would be your opinion on that?

- Maj. Jordan: 00:19:36 I don't know if I really have an opinion on it. Um. It's just, uh, the nature of what we do.
- Gostomski: 00:19:41 Right.
- Maj. Jordan: 00:19:41 Just because we are connected, we, we have the ability to, to get those experts. So-
- Gostomski: 00:19:47 Sure.
- Maj. Jordan: 00:19:48 ... if, if that different history will tell, um-
- Gostomski: 00:19:51 Okay. Okay.
- Maj. Jordan: 00:19:52 ... and, and I'm still working through the process, figuring out the right mix, you know, should you have a four-star telling you-
- Gostomski: 00:19:58 Right.
- Maj. Jordan: 00:19:59 ... you know, turn left. (laughs)
- Gostomski: 00:20:02 No. Yeah. Yeah. I see what you're saying. Yeah. It was a poorly phrased question that was little long.
- Gostomski: 00:20:06 I think, uh, do you think maybe we are better now at making decisions on when to engage, um, ethically, uh, or otherwise, uh, tactically as well, uh, than we used to be? I mean, now with, with increased connectiveness and that sort of thing?
- Maj. Jordan: 00:20:22 I, I couldn't speak to historically, but-
- Gostomski: 00:20:24 Right.
- Maj. Jordan: 00:20:24 ... we have better information, better technology-
- Gostomski: 00:20:27 Sure.
- Maj. Jordan: 00:20:28 ... um, and again, the experts to make us, help us make those decisions, uh, and so, so the logic will follow. We've gotten better over time.

Gostomski: 00:20:36 Sure thing. Yeah. Absolutely.

Gostomski: 00:20:37 What kind of experts typically are, are consulted, uh, just out of curiosity?

Maj. Jordan: 00:20:44 All kinds. Um. I don't want to get into specifics exactly.

Gostomski: 00:20:48 Okay. I understand. Yeah.

Maj. Jordan: 00:20:50 Um, but chain of command.

Gostomski: 00:20:51 Right. Okay. Absolutely.

Randy Martin: 00:20:53 What was the question?

Gostomski: 00:20:55 Uh, sorry. Go ahead.

Maj. Jordan: 00:20:56 Who ... Go ahead.

Gostomski: 00:20:57 I was just [inaudible 00:20:58]. What kind of experts are typically consulted when making a tactical decision about when to engage and that sort of thing?

Randy Martin: 00:21:03 Uh, lawyers are part of team, part of the targeting.

Gostomski: 00:21:07 Okay.

Randy Martin: 00:21:07 I mean, you, you can go and find that, uh, find out ... I mean it's a, it, it isn't left to just your average, uh, just a, it's not, um ... so ... uh ... I was just ... [inaudible 00:21:28]. (laughs) Um.

Randy Martin: 00:21:34 For him, there will be, um ... In the example he was giving earlier, uh, it was pretty clear cut that there was a enemy force in contact-

Gostomski: 00:21:46 Right.

Randy Martin: 00:21:46 ... with friendly forces and he received a request for, um, support. Um. He provided that support. Um. Many of the operations that he, uh, performs are a lot more deliberate and they are, they don't occur just in, in stride. And some, and, uh, the, the framework of the decisions that are applied for

every time that he uses, um, a weapons systems are shaped by the doctrine, the law-

Gostomski: 00:22:21 Right.

Randy Martin: 00:22:22 ... and all of those things which, which I just described.

Gostomski: 00:22:25 Absolutely.

Randy Martin: 00:22:25 Um. But I've actually been in, um, a headquarters where a, you know, a senior commander is making a decision about the employment of a, uh, a weapons system and it, it often requires there be a, contributions by a person who is managing the military intelligence, a person who is, uh, aware of, um, the, the legal framework or the legality-

Gostomski: 00:23:02 Right.

Randy Martin: 00:23:02 ... being a judge advocate or someone like that. Um. And then there will be others that will, will contribute to making a, to coming up with whether or not a target should or could, could be engaged. Does that make sense to you?

Gostomski: 00:23:17 Yeah. No. It does. Absolutely. Yeah.

Randy Martin: 00:23:20 Sorry. I had to-

Maj. Jordan: 00:23:21 And then there's the deconfliction function as well.

Gostomski: 00:23:24 Sorry. What was that?

Maj. Jordan: 00:23:25 Deconfliction.

Gostomski: 00:23:26 Deconfliction. Okay.

Maj. Jordan: 00:23:27 So you thought of war-

Gostomski: 00:23:28 Right.

Maj. Jordan: 00:23:29 ... you want to make sure that, um, everybody's kind of aware of what's going on, especially when you're going kinetic.

Gostomski: 00:23:39 Okay. So deconfliction is something like, uh, uh, like information that chain of command? Or maybe I'm misunderstanding the term. [inaudible 00:23:46] I'm not familiar with it.

Maj. Jordan: 00:23:46 The chain of command for the process would know. It's, um, the other units that are in the area.

Gostomski: 00:23:55 Okay. I see.

Maj. Jordan: 00:23:56 Might be unaware ... You know, we don't, um, we just want [inaudible 00:24:00].

Gostomski: 00:24:00 Okay. I understand. You bet.

Gostomski: 00:24:02 So would that be something like, um, if you were going to engage a target in the area, you'd be alerting, uh, other forces in the area before you, you know?

Maj. Jordan: 00:24:11 Exact ... I did make sense, right?

Gostomski: 00:24:13 [crosstalk 00:24:13] an action or something.

Maj. Jordan: 00:24:13 You want to let everybody know, hey-

Gostomski: 00:24:15 Right. Absolutely. Um. That makes perfect sense for that.

Randy Martin: 00:24:18 So, right here from that same book, you know, this here is a diagram of the whole package of people that would be involved in targeting-

Gostomski: 00:24:28 Okay.

Randy Martin: 00:24:28 ... on a very large scale. But down, you know, some operational words. Unmanned aircraft systems considerations, UASs, should be treated similar, similarly to manned systems with regard to the established doctrinal war-fighting principles, which we've been talking about-

Gostomski: 00:24:44 Right.

Randy Martin: 00:24:44 ... throughout the morning.

Randy Martin: 00:24:45 Like manned aircraft, uh, the operation of the UAS should adhere to the guidance contained in this publication while the Joint Forces Commander, uh, retains the authority to determine the use and control of UAS, which is Unmanned Aerial System Forces. Um. There are some unique issues for planners and commanders to consider when employing these systems. UAS technology can provide commanders with critical capabilities to enhance your situational awareness, which was what we talked about, ISR, earlier, to make informed decisions to protect forces, reduce collateral damage, and achieve objectives.

Gostomski: 00:25:24 Um hmm (affirmative)

Randy Martin: 00:25:24 And so, um, the U.S. Air Force refers to some of, some of it's larger US, UAS as a remotely piloted aircraft to differentiate to its operators, who have, uh, been trained, uh, to similar standards as, uh, manned aircraft pilots.

Gostomski: 00:25:40 Okay.

Randy Martin: 00:25:41 This document here is called Joint Publication 3-3, um, and it's, I mean, you can just simply do a-

Gostomski: 00:25:49 I'm sure I can get it.

Randy Martin: 00:25:49 ... search on the topic and you can go through.

Gostomski: 00:25:51 And I've got that written down actually, the page number here as well. So.

Randy Martin: 00:25:54 Yeah. So, and, and this, this thing is packed with information. If you wanted to, uh, to spend time doing research exclusively, based on, um, you know, the military, uh, doctrine, it's a huge resource.

Gostomski: 00:26:10 Okay. Yeah. Fantastic. And I had not come across that, um, in my research before so I appreciate you pointing that out.

Randy Martin: 00:26:15 Sure.

Gostomski: 00:26:15 That's fantastic.

Randy Martin: 00:26:18 Okay. So and, what if I said ... What if I asked this system about ethics?

Gostomski: 00:26:22 Let's see.

Randy Martin: 00:26:30 Um.

Maj. Jordan: 00:26:32 While Randy's looking that up, Sam, what made you, uh, curious about, uh, researching RPAs?

Gostomski: 00:26:38 Ah. So. I started off ... This is ... I have to go back a little bit. I started off as an economics major actually. Um.

Maj. Jordan: 00:26:47 I was economics.

Gostomski: 00:26:48 Yeah. Really? I, I actually enjoyed economics a lot. Um. But, uh, I guess at one point I had been working with a professor at Baylor named, uh, uh, Doctor Mark Long, who is also in the Air Force actually. He was an Air Force Intel for, uh, a little over a decade. Um. And I worked closely with him so I have a class with him now. And at one point I wanted to do an analysis on, uh, the rhetoric of extremist groups in the Middle East, combing my political studies degree and my economics. Um. Ended up moving away from economics for its philosophy, partly because I was interested in the ethics of war. Um. The more that I researched with Doctor Long, um, on kind of the details of the rhetoric of war, the more I started to wonder what motivated people to, to fight wars and then what it looked like to fight a war well, I suppose.

Gostomski: 00:27:37 Um. So. Ultimately this ended up being the, uh, the, the issue that I think was the most interesting and least studied, partly just, it's really a function of time, right? [inaudible 00:27:50] maybe 2008 since at least the public has known very much about these kinds of operations. Um.

Maj. Jordan: 00:27:54 Okay.

Gostomski: 00:27:55 And, so there is a not as much publication on this kind of thing that hasn't been done by the military. So that was mostly where my interest came from for the most part, um, yeah.

Maj. Jordan: 00:28:05 So if you're reading Lawrence Wright's book, you saw the connection between Al-Qaeda and economics?

Gostomski: 00:28:10 Yes. Absolutely. Absolutely. Um. I mean, if bin Laden had not been the multi-man that he was and, uh, [inaudible 00:28:20] money so bad, we could be in a very different world today.

Gostomski: 00:28:22 But, yeah. Very interesting stuff for sure.

Randy Martin: 00:28:24 Take-

Gostomski: 00:28:25 Just out of curiosity ... I'm sorry. My apologies.

Gostomski: 00:28:27 Is that something that you researched, uh, when you were in, in school?

Maj. Jordan: 00:28:30 I have a, a Masters Degree in Homeland Security.

Gostomski: 00:28:33 Okay. Okay. Uh, I did not not know that was an available Master Degree. That's really interesting. Where'd you, where did you get your Masters?

Maj. Jordan: 00:28:37 American Military University.

Gostomski: 00:28:37 Okay. Where is that? Just to-

Maj. Jordan: 00:28:37 It's online.

Gostomski: 00:28:37 Okay. Alright. Wonderful. That's very interesting. Something I might look into it actually.

Maj. Jordan: 00:28:47 I'd really look into it.

Gostomski: 00:28:47 Okay. Wonderful.

Gostomski: 00:28:51 Sorry.

Randy Martin: 00:28:51 Great article. Check that out real quick. Just glance through it.

Randy Martin: 00:28:54 I'm gonna go to the bathroom.

Gostomski: 00:28:54 Absolutely.

Maj. Jordan: 00:28:56 You might have to let Randy out there.

Randy Martin: 00:28:57 Yeah. Sorry.

Gostomski: 00:28:57 Sorry about that.

Randy Martin: 00:28:59 I wasn't going any further. It's an old building.

Gostomski: 00:29:00 Sorry.

Gostomski: 00:29:06 I may just ... If you need to use the restroom, something I don't want to-

Maj. Jordan: 00:29:09 Yeah. No worries.

Gostomski: 00:29:10 I know I'm eating up a lot of y'all's morning. So I very much appreciate it.

Maj. Jordan: 00:29:14 You, you know what? I'm glad to do it because, there is, uh, a wrong perception about what we do.

Gostomski: 00:29:20 I believe that's absolutely true. Absolutely. Interesting. Now see ... This is a very interesting article. And I appreciate since this ... I'm sorry. I'm gonna write it down real fast and then-

Maj. Jordan: 00:30:04 Okay.

Gostomski: 00:30:04 ... and then comment on it. Let's see.

Gostomski: 00:30:38 Okay. Sorry.

Randy Martin: 00:30:38 Has this been good for you?

Gostomski: 00:30:43 Oh yes, sir. Absolutely.

Gostomski: 00:30:44 So I was just ... Sorry about that.

Randy Martin: 00:30:45 It's okay.

Gostomski: 00:30:46 I was just telling Major [Jordan] [REDACTED] that I appreciate you guys using so much of your morning to talk to me. So.

Randy Martin: 00:30:50 No problem. Um. [inaudible 00:30:52] So. He's, uh ... You've actually, uh, consumed quite a bit of our time. Throughout the week we've been talking about this, uh, meeting, 'cause, uh-

Gostomski: 00:31:04 Okay. Well.

Randy Martin: 00:31:05 That's ... It's good. We're, I'm glad you're doing this and hopefully this will help you and maybe whoever reads your, your final project will, will benefit from this as well.

Gostomski: 00:31:14 So ... Well, that is the goal hopefully, right?

Randy Martin: 00:31:16 Yeah.

Gostomski: 00:31:17 But I do appreciate very much you guys thinking about this so much and taking the time to talk to me. Um.

Gostomski: 00:31:21 And I was just about to, to say to him that this is an interesting article to me 'cause I was appreciate to him defining his terms. Um. That he has an issue it says with, uh, unmanned, uh, weapons systems as well. And I think that that's probably accurate. My, the actually official title of my thesis uses the term robotic warfare, because I don't think the unmanned systems is accurate. Um.

Gostomski: 00:31:44 Though one of the chapters does address the question of what it would look like to have an unmanned system and whether or not that would be ethical. I can draw the conclusion that I think that it would not be, but, um-

Randy Martin: 00:31:54 Well we do employ, we do employ robots, um, and in a remote control mode, uh, for different things. For example, you know, we operate unexploded ordinance, um, teams famously use, uh, robots to go by ground to areas that they, uh, they need to, uh, look at. And then, um, either eliminate or at least report back on-

Gostomski: 00:32:25 Sure.

Randy Martin: 00:32:26 ... those weapons. Uh. But they're also remote controlled, but they're still robotic.

Gostomski: 00:32:31 Right.

Randy Martin: 00:32:31 So robotic and robots and-

Gostomski: 00:32:35 Right.

Randy Martin: 00:32:35 ... it's, there's a bunch of terms that are in there.

Gostomski: 00:32:38 Well I think all these terms become complicated because, well, partly because the technology is new, right? Hence, relatively speaking, very new, um, so we have a hard time defining our terms there. And then partly because I think agency gets tied up in these definitions so when you say things like robotic you picture, uh, you know, maybe an autonomous being rolling around making its own decisions. But that's not what I mean by the term, um, it's just any weapons system that you are not in direct contact with like a hand gun or a rock, right?

Maj. Jordan: 00:33:05 Physical contact. Yeah. Okay.

Gostomski: 00:33:06 So, um, I do think that that is part of perhaps the perception issue with the weapons, um, is the term, and this is why I appreciate this, this Jim [Garramone 00:33:19] Defining History [inaudible 00:33:20].

Maj. Jordan: 00:33:19 I don't think we ever gave you the official term. Remotely piloted aircraft is the official-

Gostomski: 00:33:24 Okay.

Maj. Jordan: 00:33:25 ... Air Force term.

Gostomski: 00:33:25 Okay.

Maj. Jordan: 00:33:26 We've stopped trying to fight the drone term. We kind of (laughs)-

Gostomski: 00:33:29 (laughs) Okay.

Maj. Jordan: 00:33:29 ... accepted.

Randy Martin: 00:33:30 Did you read that article I just wrote for him a second ago?

Maj. Jordan: 00:33:32 I didn't.

Randy Martin: 00:33:33 It actually-

Maj. Jordan: 00:33:34 Said [crosstalk 00:33:35]

Randy Martin: 00:33:34 ... perfectly addressed it. He said, he described it ... It, it summed up everything we've been talking about and explained that remote ... He would never use the, this term instead it's remotely piloted aircraft. And that the American public had this idea of mindless, uh, beast roaming around on them-

Maj. Jordan: 00:33:51 Mindless. Yeah.

Randy Martin: 00:33:51 ... Yeah. Mindless and autonomous-

Gostomski: 00:33:53 Right.

Randy Martin: 00:33:54 ... weapons moving around on the battlefield. So. Yeah.

Randy Martin: 00:33:57 And we, I mean, and we ... Although I just checked to see if, um, if this book had robot in it as a term. But, we are, we try to be very deliberate in-

Gostomski: 00:34:10 Right.

Randy Martin: 00:34:10 ... the use of every word that we, we have. So where as there's a Webster's Dictionary-

Gostomski: 00:34:15 Right.

Randy Martin: 00:34:15 ... there's a terms and definitions for everything that we talked about here. So.

Gostomski: 00:34:21 That I have come across. The DOD has an entire I think index, I think-

Randy Martin: 00:34:26 Exactly.

Gostomski: 00:34:26 ... right?

Randy Martin: 00:34:26 Yep.

Gostomski: 00:34:26 Yep. That's right.

Randy Martin: 00:34:26 So you could go through here.

Randy Martin: 00:34:28 And when we communicate to each other in, it goes back to this here. That's the understanding. So.

Gostomski: 00:34:35 Right.

Randy Martin: 00:34:37 If I use the term, for example, ... Let's see. Neutralize. Let's see. Next. Oh.

Gostomski: 00:34:55 I think that might have been it.

Randy Martin: 00:34:55 That was it.

Gostomski: 00:34:57 That right there. There we go.

Randy Martin: 00:34:58 As pertains to military operations, to render ineffective or unusable. To render any personnel or material incapable of interfering with a particular operation. To render safe minds, blah, blah, blah, blah, blah.

Randy Martin: 00:35:12 Now "destroy" is gonna be different. No. Actually, they didn't even address it. It's used throughout the book, but ... Darn it. Not a good example. You get my point.

Gostomski: 00:35:47 Oh yeah. Absolutely. I, I understand the point that you're trying to make certainly.

Gostomski: 00:35:50 And I think, I mean, it is important, in philosophy, um, certain, as well as in, uh, administration and war, it is important to have your terms defined correctly. I think that's something that probably hasn't been done in the public discourse surrounding this issue very well.

Gostomski: 00:36:04 Um. I probably will continue to use the term robotic warfare for the purpose of my thesis because I'm looking at the question of whether or not the

weapons that are, like I said, that are not in physical contact with their operator, um, are, you know, carry any special ethical considerations. Um. So that would include, uh, like bomb defusing [inaudible 00:36:24]. I don't know if there's a term for that in military jargon. A bomb-diffuser robot. I'm not sure exactly, but-

Maj. Jordan: 00:36:29 Well I, um-

Gostomski: 00:36:30 But, uh, you know, the distinction between kind of like a remotely piloted aircraft. But, um, yeah, I do think drones probably carries-

Gostomski: 00:36:38 ... yeah, a negative connotation.

Maj. Jordan: 00:36:39 Um hmm (affirmative).

Randy Martin: 00:36:42 I actually, and he might even be around still, um, my ... I had a command, a commander who, um, two-star general, who, um, went, uh, to, uh ... Well, he ended up being three stars. He went to, um, what's the major ... uh, Massachusetts ... MIT.

Gostomski: 00:37:08 Oh. Right.

Randy Martin: 00:37:09 Yeah. And he majored in, uh, for his Masters Degree, um, he majored in robotics. His name is, uh, Rick [Lynch 00:37:22]. He is a, he's up in Dallas. Actually, let me see if I can find him. I can put you in contact with Rick Lynch.

Gostomski: 00:37:32 That would be phenomenal.

Randy Martin: 00:37:33 And-

Gostomski: 00:37:34 Thank you very much.

Randy Martin: 00:37:36 That's it. Rick Lynch Enterprises, Lieutenant General Retired. Let's see. Looks like he's got a book out there. Adapt or Die. Um.

Maj. Jordan: 00:37:49 I've got another contact too. Um. Randy, if you don't mind to search for a name?

Randy Martin: 00:37:52 Yeah.

Maj. Jordan: 00:37:54 Google. Makes sure I get it right. I believe the name is, uh, and you might have already read his book, Sam. Peter Singer.

Gostomski: 00:38:04 Oh, yeah. Absolutely. I've heard a lot of things about Peter Singer.

Maj. Jordan: 00:38:09 He's done a lot of research into robotics. Um.

Gostomski: 00:38:11 Okay.

Maj. Jordan: 00:38:11 Sounds like you've already, you've already got him.

Gostomski: 00:38:14 Yes, sir. I have definitely read his things, but I have not contacted him personally to ask any questions.

Maj. Jordan: 00:38:20 I don't know him personally, I just heard some of his things-

Gostomski: 00:38:22 Okay.

Maj. Jordan: 00:38:23 ... about robotics.

Gostomski: 00:38:25 He, uh, he wrote a book ... What, what was the, what was the [crosstalk 00:38:28]-

Maj. Jordan: 00:38:28 *Wired for War.*

Gostomski: 00:38:29 That's right. Yeah. I read a good portion of that book, although I haven't finished it yet. Um. Yeah. He's an excellent writer. He does, he was at, uh, Princeton, I think, right? Is that correct? I'm not sure.

Gostomski: 00:38:40 But, I, I appreciate that recommendation. He, he's very, very interesting. Also gets confused with the philosopher, Peter Singer a lot, so I have (laughs), had to clarify that quite of bit for the last couple of months. But, you know, thank you. I appreciate it.

Randy Martin: 00:38:55 Um. That's, that's the email that he gives ...

Gostomski: 00:38:57 Okay.

Randy Martin: 00:38:57 Let's see if, um,

Gostomski: 00:39:10 [inaudible 00:39:10] on that you know of.

Randy Martin: 00:39:10 Yeah. Okay. So what he does right now or what he was doing, 'cause he was working in, uh, he was working in Dallas area for one of the Texas, uh, colleges or universities up there in-

Gostomski: 00:39:26 Okay.

Randy Martin: 00:39:28 ... one of their ... [crosstalk 00:39:33]

Gostomski: 00:39:33 Thank you very much. I appreciate that.

Randy Martin: 00:39:43 Thank you.

Randy Martin: 00:39:44 He'd be a great person to, you know, send him a couple questions.

Gostomski: 00:39:47 Absolutely.

Randy Martin: 00:39:47 And he's, um, he is a ... That's him right there. He is a, uh ... Well, matter of fact, there's the book that he wrote. Um. Work Hard, Pray Hard.

Gostomski: 00:40:04 Okay.

Randy Martin: 00:40:04 The power of faith in action. So this, this is a man who, uh, sat at the head of a table and made decisions about when to employ weapon systems. And I can tell you that he was guided by, uh, not just the, um, military training, which has informed his entire life-

Gostomski: 00:40:28 Right.

Randy Martin: 00:40:29 ... um, but also by the, uh, his sense of, um, faith and, and ethics.

Gostomski: 00:40:36 Absolutely. Yeah.

Randy Martin: 00:40:36 That, um, and so, of course, he's an Army guy, but he frequently calls for ... In fact, the Army, which I'm a product of, um, is the Air Force's biggest customer. So when we have, uh, kind of, when we're, when he's in, um, contact with the enemy ... You know, you look at what are, what are the

effects you want to generate, which you neutralize. Maybe one of them, can you do it with a, with a bomb? Uh. Or can you do it with communication or can you do it through some other, other manner?

Gostomski: 00:41:16 Right.

Randy Martin: 00:41:16 And, um, that's how we think all the time.

Maj. Jordan: 00:41:20 Effects based.

Randy Martin: 00:41:21 Yeah.

Gostomski: 00:41:22 Sorry. What is that?

Maj. Jordan: 00:41:23 Effects based.

Gostomski: 00:41:24 Effects space. Okay.

Randy Martin: 00:41:25 Effects based.

Gostomski: 00:41:26 Oh. Effects based. Okay. [inaudible 00:41:29]

Maj. Jordan: 00:41:28 The Air Force is, our, our ... One of our biggest strategies is effects-based warfare. So you don't always have to employ a weapon to achieve an effect.

Gostomski: 00:41:50 Could you give me an example of something that might be like effects-based warfare that wouldn't employ a weapon?

Maj. Jordan: 00:41:57 I'm careful here.

Gostomski: 00:41:59 Right. I understand.

Randy Martin: 00:42:01 Um.

Maj. Jordan: 00:42:05 Show of force. Can we talk about show of force?

Randy Martin: 00:42:07 Yeah. Of course.

Maj. Jordan: 00:42:10 So, um, show of force. Uh. Fighter airplane. High speed. Low altitude. To scare the enemy.

Gostomski: 00:42:20 Okay. Right.

Maj. Jordan: 00:42:21 Instead of, uh, employing the weapon. And maybe that achieves the effect of breaking contact and allowing us-

Gostomski: 00:42:31 Right.

Maj. Jordan: 00:42:32 ... to maneuver.

Gostomski: 00:42:33 Right. Okay. Interesting.

Gostomski: 00:42:33 And this may be, I don't know if you can talk about this or not, but when, when, um, or how are decisions made, uh, about whether or not to engage in that manner or whether or not to engage, uh, using some kind of, uh, I don't know, other deadly force or kinetic force or whatever?

Maj. Jordan: 00:42:50 It's all situational.

Gostomski: 00:42:52 Okay. Okay. Absolutely.

Maj. Jordan: 00:42:53 Um. And those decisions are just made real time by the, um, reigning mission that supported-

Gostomski: 00:43:00 Right.

Maj. Jordan: 00:43:01 ... a piece of it, so whoever's being supported.

Randy Martin: 00:43:04 Yeah. So. And I, at the big, at the greatest level, because in the United States is the Commander and Chief and makes decisions on where, on when to employ forces. His Executer, Executor of that is, of course, the Secretary of Defense and he has, um, his own, uh, Chiefs of Staff for each of the services, all under the Joint Chiefs of Staff.

Randy Martin: 00:43:31 The, and they of course, it gets broken further and further out until you finally have the team leader who's 20 years old and straight out of, um, advanced individual training at, um, at, uh, Fort Benning, Georgia or tech school here at Lackland, and they're at the front doing what it is that they do.

Randy Martin: 00:43:54 All of their training, all of the doctrine, all of the, the experience-

Gostomski: 00:43:59 Right.

Randy Martin: 00:43:59 ... and the levels of authority that go into making decisions. That's, that really is the, what we're, we're talking about here.

Gostomski: 00:44:10 Okay. That absolutely makes sense.

Randy Martin: 00:44:10 That whole body of, of, uh, consciousness.

Gostomski: 00:44:14 Right. Absolutely. So we're talking about an entire, entire chain of command, it's not just one.

Randy Martin: 00:44:18 Entire system. Yes. Exactly.

Gostomski: 00:44:20 Absolutely. Okay. I understand.

Gostomski: 00:44:22 If I do, um, reach out to General Lynch, do you mind if I mention-

Randy Martin: 00:44:26 No. [crosstalk 00:44:27] mention my name, my name.

Gostomski: 00:44:28 ... that I met with y'all in the email?

Randy Martin: 00:44:28 He won't know, he won't know, um, Joker.

Gostomski: 00:44:31 Okay. How should I refer to you in that email?

Randy Martin: 00:44:33 Randy. Randy Martin.

Gostomski: 00:44:35 Alrighty.

Randy Martin: 00:44:36 Randy Martin. You know? I've got my business card here somewhere.

Gostomski: 00:44:36 Oh. Yes. Thank you very much.

Randy Martin: 00:44:36 Um.

Gostomski: 00:44:45 Just that way he knows I've had a conversation on this-

Randy Martin: 00:44:47 Yeah.

Gostomski: 00:44:47 ... with you before and where we're starting off, not from-

Randy Martin: 00:44:50 And he's a busy fella. I, he's, um-

Gostomski: 00:44:51 I understand.

Randy Martin: 00:44:53 Let me see if I got him.

Randy Martin: 00:44:54 You can keep talking to him there. Joker, I'm checking something else.

Maj. Jordan: 00:44:58 Yeah.

Randy Martin: 00:44:58 I'm looking for his phone number.

Gostomski: 00:45:04 Alright. I appreciate that very much.

Gostomski: 00:45:10 Um.

Maj. Jordan: 00:45:11 Let me ask you this. Um. Do you know the scale of, uh, remotely piloted aircraft, how large they are?

Gostomski: 00:45:18 I have very little idea. I have seen pictures of them, um, uh, next to, next to individuals.

Maj. Jordan: 00:45:27 Yep.

Gostomski: 00:45:27 And some of them seem pretty large, um, but I don't know what they, what the range of, of sizes would be for them at all.

Randy Martin: 00:45:35 Why don't you take him over there. Um.

Maj. Jordan: 00:45:37 Okay. To the-

Randy Martin: 00:45:38 Yeah.

Randy Martin: 00:45:39 Yeah. And just give him, can you give him a windshield tour? Don't impose on anybody.

Maj. Jordan: 00:45:45 Sure.

Randy Martin: 00:45:45 And Mike, no, you know what I'm talking about. Our experience before.

Gostomski: 00:45:47 I don't want to be an imposition. So. [crosstalk 00:45:49]

Randy Martin: 00:45:49 Yeah. As long as you're underneath his wing, you're in good shape so to speak. Wing position.

Gostomski: 00:45:53 Okie doke.

Randy Martin: 00:45:55 Um. Could you take him to the 560th too?

Maj. Jordan: 00:45:58 Yeah.

Randy Martin: 00:45:59 Um. I was gonna show you a little bit more, but I need to get busy on some other things.

Gostomski: 00:46:02 Totally understand. I appreciate your time very much.

Randy Martin: 00:46:04 Reach out to me. You've got my phone number.

Gostomski: 00:46:06 I will.

Randy Martin: 00:46:06 Um. I'll contact, uh, General Lynch and then, uh, if you wanna give, give us ... You have a business card?

Gostomski: 00:46:13 Sure. Unfortunately, I don't have a business card.

Randy Martin: 00:46:14 Okay. That's okay.

Gostomski: 00:46:14 I should probably get one. But, uh, I can write out or you my email address.

Randy Martin: 00:46:18 That's fine, if you want to do that?

Gostomski: 00:46:19 Sure thing.

Randy Martin: 00:46:20 Um. But, yeah. I was gonna show you the ... Right beneath us here in this building is the Judge Advocate office.

Gostomski: 00:46:28 Okay.

Randy Martin: 00:46:29 And so, you, you just can't make decisions as a commander without consulting the, your, your JA.

Any commander that makes decisions without consulting their JA-

Maj. Jordan: 00:46:43 JA is a Judge Advocate.

Gostomski: 00:46:44 Judge Advocate. Okay.

Randy Martin: 00:46:46 With, without consulting their, their JA is of course, accepting risk. And that's okay sometimes. But, if, 'cause you don't want lawyers necessarily making, being exclusively with the people who are making decisions.

Gostomski: 00:47:00 Absolutely.

Randy Martin: 00:47:00 But in command, a commander is of course is empowered with a great deal of authority and trust that the American people has at least in part have, had a role to play in [inaudible 00:47:12].

Randy Martin: 00:47:12 Hey, Chief. What's up?

Speaker 4: 00:47:14 Walking around saying hi.

Randy Martin: 00:47:15 Oh, okay. Chief.

Randy Martin: 00:47:18 So. [inaudible 00:47:19] He's just popped his head in here. He's our, um, our Command Chief. So he enlisted in the Air Force 21, 22 years ago. He's run to the highest rank of, uh, he can achieve in, in the Air Force-

Gostomski: 00:47:38 Right.

Randy Martin: 00:47:38 ... um, by being enlisted. And, uh, Major's about halfway through his career, on his way to the fourth, his four stars. Someday. (laughs)

Maj. Jordan: 00:47:46 Yeah. (laughs)

Gostomski: 00:47:46 Absolutely.

Maj. Jordan: 00:47:47 Maybe.

Randy Martin: 00:47:49 But, uh, that's, that's-

Gostomski: 00:47:51 Okay.

Randy Martin: 00:47:51 ... that's the world we're in. And, and I recognize that you probably haven't had the emersion in the world that we're in and ... But, if you listen to what he provides you, shows you and what, what we're kind of pointing you in the direction-

Gostomski: 00:48:06 Absolutely.

Randy Martin: 00:48:07 ... you're of, you're gonna end up with a ... You're gonna be better informed and ready to go, even to that next level. Uh. Hopefully we're giving you, um, uh, tools that you can do research.

Randy Martin: 00:48:20 Eventually when you do go to get a Masters Degree-

Gostomski: 00:48:22 Sure.

Randy Martin: 00:48:23 ... working on, that you can still tap into.

Gostomski: 00:48:25 Well, I appreciate that very much and you're absolutely right. I'm definitely not emersed in, uh, the world that you guys are.

Gostomski: 00:48:32 So I'm sure some of my questions probably seem a little bit, um-

Randy Martin: 00:48:35 Well ... it-

Gostomski: 00:48:35 ... off base a little bit [crosstalk 00:48:37]

Maj. Jordan: 00:48:36 No more than the average person's.

Gostomski: 00:48:39 Well, I appreciate that. Thank you. Um.

Randy Martin: 00:48:41 You're trying and that's, that's admirable. Because, you know, a lot of people your age or, or level of experience are in the journalism field for example, and they'll get it wrong.

Randy Martin: 00:48:54 Um. You're, you have the opportunity to do a lot of in depth research here and, and, and really focus. The key, the trick is for you I think, is being able to tie back to this whole robotics, um, thesis that

you're pointing to. 'Cause what he's talking to you is no what we would technically call robotics.

Gostomski: 00:49:21 Right.

Randy Martin: 00:49:22 He's, we're talking about something different than robotics.

Gostomski: 00:49:26 Okay.

Randy Martin: 00:49:26 Um. And, if you're ... And I know you're a smart young man. Um. You'll be able to tie this back to that. Um. You know, especially if we can point you in the direction of some experts on robotics-

Gostomski: 00:49:42 Right.

Randy Martin: 00:49:42 ... and the employment of robotics. And maybe your thesis, um, um, goes in a new direction. I know your professor probably is telling, has told you that you probably can, can, you know, make changes if you need to.

Gostomski: 00:49:57 Oh. Absolutely. Absolutely. Yeah.

Randy Martin: 00:49:59 So don't ... If you discover something new along the way, don't be afraid to go back to him and say-

Gostomski: 00:50:04 Sure thing.

Randy Martin: 00:50:05 ... can you go little bit over here. You know, it's kinda, kinda changed a little bit.

Gostomski: 00:50:08 Yeah.

Randy Martin: 00:50:09 I think that it might serve you.

Randy Martin: 00:50:11 But I'm gonna find Rick's ... Um. Go ahead.

Gostomski: 00:50:13 I was gonna say, that's certainly the goal, um, of talking to the both you is to make sure that I'm heading in the right direction as I get to, to writing this particular chapter. Um.

Gostomski: 00:50:23 Obviously, for the, for the parts that are more directly related to ethics, um, you know, the focus is

not strictly on, on the specifics of robotics as much, um, and that kind of thing. But, um, I think certainly the goal is to, to try and be informed enough that I don't, uh, I don't end up writing entire chapters in the wrong direction. If that's any sense?

Randy Martin: 00:50:42 Yeah. I would, I think you're gonna find some really good ways to leverage his, um, his experience in your paper. Um. You, you gave me your information?

Gostomski: 00:51:00 I did. It's right there.

Randy Martin: 00:51:01 I'll, and maybe-

Gostomski: 00:51:02 Maybe next time I'll have a business card for you.

Randy Martin: 00:51:03 Oh, well. Maybe [inaudible 00:51:05] whenever you're, you're like the boss of your own corporation [inaudible 00:51:09] or something like that.

Gostomski: 00:51:10 Well, I don't know. I don't know if I'll hold my breath for that one [inaudible 00:51:12].

Randy Martin: 00:51:12 When do you graduate?

Gostomski: 00:51:14 Yes, sir.

Randy Martin: 00:51:15 When do you graduate?

Gostomski: 00:51:16 Oh. When do I graduate?

Randy Martin: 00:51:17 Yes.

Gostomski: 00:51:18 It might be in December [inaudible 00:51:18].

Randy Martin: 00:51:18 In December?

Gostomski: 00:51:19 Yes, sir. A little bit, a little bit early.

Randy Martin: 00:51:21 What are you gonna do after that?

Gostomski: 00:51:22 [inaudible 00:51:22] (laughs)

Randy Martin: 00:51:24 What are you gonna do after that?

Gostomski: 00:51:25 Uh. One, one semester of work for sure to save money for graduate school and I'll be applying for graduate school, um, this fall. So I'll find out sometime in the spring whether or not I'm going to graduate school in the fall or what not. [inaudible 00:51:37].

Maj. Jordan: 00:51:33 Through Baylor?

Gostomski: 00:51:39 Sorry?

Maj. Jordan: 00:51:39 At, at Baylor?

Gostomski: 00:51:40 Actually, I'll be applying, uh, to [Selaz 00:51:43]London, uh, apply at Oxford University of Saint Andrews. One year Masters programs will cheaper in England, so that's part of the reason I'm applying for those. Um. And then, I'll probably apply for a Masters program at, uh, Baylor.

Gostomski: 00:51:55 Um. And actually I'm interested about asking you if when we're done here about, um, about this, uh, Homeland Security, uh, Masters [inaudible 00:52:02]. It sounded very interesting.

Maj. Jordan: 00:52:03 I'm a Ambassador for the AMU.

Gostomski: 00:52:06 Oh. Wow. Okay.

Maj. Jordan: 00:52:06 I just volunteered that so-

Gostomski: 00:52:08 Oh. Fantastic.

Maj. Jordan: 00:52:09 I've got a lot of resources and-

Gostomski: 00:52:13 Yeah. Absolutely. [inaudible 00:52:13]

Gostomski: 00:52:14 Well, um, Mr. Randy, I appreciate your time very much.

Randy Martin: 00:52:19 You're very welcome.

Gostomski: 00:52:19 Thank you for letting me take up so much of your morning. I appreciate, um, yeah, what you do.

Randy Martin: 00:52:21 Alright.

Gostomski: 00:52:21 Thank you for all the information and I'll, I'll be in contact with you.

Randy Martin: 00:52:21 Okay.

Gostomski: 00:52:21 Thank you so much.

Randy Martin: 00:52:21 Good luck.

Gostomski: 00:52:21 I appreciate it.

Randy Martin: 00:52:28 See ya.

Maj. Jordan: 00:52:32 I'm gonna pack up a lunch real quick, and we'll, uh-

Gostomski: 00:52:33 Oh. Sure thing.

Maj. Jordan: 00:52:33 ... go on the tour.

Gostomski: 00:52:33 Sure thing.

Maj. Jordan: 00:52:38 [inaudible 00:52:38] Old school metal [inaudible 00:52:41].

Gostomski: 00:52:41 Oh. Wow. Look at that. That would survive just about anything. You could run that over with a truck probably.

Maj. Jordan: 00:52:54 Yeah. Um. I like old school stuff. I've got an old plastic car.

Gostomski: 00:52:55 Oh really? What kind of car is that?

Gostomski: 00:52:55 Oh wonderful.

Maj. Jordan: 00:52:55 '65 GTO.

Gostomski: 00:52:59 Oh, that's beautiful. My, uh, my dad is into [inaudible 00:53:01] cars. I'm into it myself actually, well sorta. 1965 Chevrolet [inaudible 00:53:06]. Oh wow. [inaudible 00:53:09] for a little while. Me and my bother put a [inaudible 00:53:12] in a '63. Um. [inaudible 00:53:16] had a '64. Um. So he likes the trucks. Trucks and Corvettes. [inaudible 00:53:21]

Maj. Jordan: 00:53:21 Awesome.

Gostomski: 00:53:22 I used to follow [inaudible 00:53:23] to the auctions. [inaudible 00:53:26]

Maj. Jordan: 00:53:28 It's a lot of fun. You do all the work on it. Learn as you go.

Gostomski: 00:53:30 Yeah. And at the end of the day, you've, uh, accomplished something visible, you know?

Maj. Jordan: 00:53:37 Exactly. You're right. A sense of accomplishment is a great feeling.

Gostomski: 00:53:38 If you, uh, if you're interested, there's a author named, uh, um ... Thank you again, sir.

Randy Martin: 00:53:44 Yep.

Maj. Jordan: 00:53:44 See you, Randy.

Gostomski: 00:53:46 Matthew Crawford. He wrote a book called Shop Class is SoulCraft that's about, uh, his life as, uh, a motorcycle mechanic actually. He quit a job in a think tank in D.C. and, uh, opened a motorcycle shop. And, uh, and then ended up writing this book and was granted, uh, uh, a distinguished professorship at the University of Virginia actually. So he doesn't have to show up to work. He still runs the motorcycle shop and just writes books about it now.

Maj. Jordan: 00:54:13 That's awesome.

Gostomski: 00:54:13 It's a fantastic, uh, career path if you can do it, I think. So.

Maj. Jordan: 00:54:17 Yeah. [inaudible 00:54:17] before.

Maj. Jordan: 00:54:16 I'm a big fan of the Jay Leno Garage. I think that's [inaudible 00:54:22].

Gostomski: 00:54:23 Yeah. Yeah. My dad really enjoys that show.

Maj. Jordan: 00:54:28 Trying to get on that show.

Gostomski: 00:54:29 You should try and get on that show.

Maj. Jordan: 00:54:30 I want to put an MQ-9 next the car and show the scale.

Gostomski: 00:54:36 I would actually ... You know what? I'd bet they'd take you up on that too.

Maj. Jordan: 00:54:38 I'm in contact with them. I just, I got [inaudible 00:54:45].

Gostomski: 00:54:44 I understand. You're in contact with a lot of people. So you've got Lawrence Wright and now Jay Leno. I mean-

Maj. Jordan: 00:54:48 Yeah. And Ali Soufan is another guy [inaudible 00:54:51]. And then he was the-

Gostomski: 00:54:54 Ali Soufan. Okay.

Maj. Jordan: 00:54:54 He was in the books. [inaudible 00:54:58] He was the FBI agent.

Gostomski: 00:55:00 Oh. You know what? I remember his name now that you bring it up actually.

Maj. Jordan: 00:55:04 He's written a couple books too. I've read Black Banners and just finished, uh, his new one called The Anatomy of Terror.

Gostomski: 00:55:10 Oh, you know what? I have ... I don't think I had heard of Black Banner, but Anatomy of Terror sounds very familiar. I think it's probably-

Gostomski: 00:55:17 ... my Amazon recommended list somewhere most likely. So.

Maj. Jordan: 00:55:20 Yeah. It, it really kind of explains the Iraq, Syria crisis.

Gostomski: 00:55:24 Okay.

Maj. Jordan: 00:55:24 [inaudible 00:55:24] I'm gonna be hit by a Prius.

Gostomski: 00:55:32 (laughs) Might not be too big of a deal. Might just roll over the top.

Gostomski: 00:55:37 When we used to work on those in, uh, his garage and ... Do you know where Boerne is? Right off-

Maj. Jordan: 00:55:42 Yeah.

Gostomski: 00:55:42 Yeah. It's a, it's shop right on, as you're coming into Boerne on the right, uh, Graham's Auto Body. And when we use to work on these Prius's, um, you actually can, you can hit something really hard with them before it does damage 'cause it's all plastic and foam under the bumper. Mind if I just throw my backpack in the back here?

Maj. Jordan: 00:56:06 Yeah. That's fine.

Maj. Jordan: 00:56:12 Making fun of Prius and I've got the smallest truck on base.

Gostomski: 00:56:14 (laughs)

Maj. Jordan: 00:56:15 Had this thing ever since college.

Gostomski: 00:56:17 My brother has, uh, has always been at wanting a Ford Ranger. We always had big trucks at my house and, uh, he drove a Ford Ranger. He works the same garage. Drove a Ford Ranger. I was like, man, it's real easy to park this thing.

Maj. Jordan: 00:56:30 Yeah. It is. You got great visibility.

Gostomski: 00:56:31 You've got great visibility. And honestly, I'd say a nine out of 10 times the things you need a truck for, you can do just fine with, uh-

Maj. Jordan: 00:56:38 Yeah.

Gostomski: 00:56:38 ... without, uh, an F-150 or whatever. So.

Maj. Jordan: 00:56:43 This thing has a bigger bed than the Avalanche.

Gostomski: 00:56:45 Yeah. That's true. Absolutely.

Maj. Jordan: 00:56:47 I laugh at those trucks. They've got like a four-foot bed.

Gostomski: 00:56:50 It's becomes, it's kind of a trend right now, an SUV with a three and a half foot bed on the end.

Maj. Jordan: 00:56:55 Yeah. Put like a suitcase back there.

Gostomski: 00:56:58 Yeah, pretty much. Good luck getting a ladder, any plywood, or anything back there.

Maj. Jordan: 00:57:02 So the place we're going now is the 558th Flying Training Squadron.

Gostomski: 00:57:10 Okay.

Maj. Jordan: 00:57:10 It's where I instruct students. And it's our version of pilot training. And, and I'll talk you through kind of the training pipeline, um, when we get there.

Gostomski: 00:57:20 Okay. Excellent. That's fantastic.

Gostomski: 00:57:22 Well that's actually something that I wanted to talk to you about that I didn't seem particularly, uh, relevant back there. But, um, one thing though that I think potentially the public is misinformed about and certainly I was unable to find any reliable information on is what it looks like day to day to work, um, you know-

Maj. Jordan: 00:57:39 Yeah.

Gostomski: 00:57:40 ... in these operations. Uh. What it looks like to train these pilots and what it looks like to be a pilot, that kind of thing. Um. At least base on the stuff that I've seen, there hasn't been too many first hand accounts of that kind of stuff. So I'm super interested what that looks like.

Maj. Jordan: 00:57:54 And it's not fault of your own. There's just not a lot of good information out there. Um. We have our students show up and, and they don't really know anything that you described.

Gostomski: 00:58:05 Right.

Maj. Jordan: 00:58:05 So it's a problem and that's why I'm doing these recruiting efforts like, like the Jay Leno Garage.

Gostomski: 00:58:12 Right. Absolutely.

Maj. Jordan: 00:58:13 Flown around the country talking to ROTC detachments and just trying to get positive word, the truth out there. And it's, again, it's why I wanted to work with you.

Gostomski: 00:58:26 I appreciate that very much.

Maj. Jordan: 00:58:27 Sort of the chance to tell our side of the story.

Gostomski: 00:58:30 Would you be interested if, uh, I mean, in addition to using some of the stuff for a thesis, if there's additional material, would be, would you be interested in having something, uh, on the lines, different than the ethical questions, but something more along lines what it looks like and the day to day training drone pilots being published in like a newspaper article or something like that?

Maj. Jordan: 00:58:49 Yeah. That's stuff probably would have to go through Randy, but, uh-

Gostomski: 00:58:51 Right. I understand.

Maj. Jordan: 00:58:53 ... any kind of, uh, recruiting type stuff would be beneficial.

Gostomski: 00:58:57 Okay.

Maj. Jordan: 00:58:57 We have some pamphlets, uh, that I'll give you. It's like a tri-fold kind of thing. Um. That's been approved for public release.

Gostomski: 00:59:05 Okay.

Maj. Jordan: 00:59:05 And it describes, um, a little bit about the community and what we do here.

Gostomski: 00:59:11 Alright. Yeah. I'd be definitely be interested in taking a look at that.

Gostomski: 00:59:22 So just for my own edification. Which base is bigger just out of curiosity? Lackland or Randolph? I don't know. I haven't been on Lackland. So.

Maj. Jordan: 00:59:30 Lackland's pretty big. They, I think they're bigger than us. Um. Because they do all the basic training there.

Gostomski: 00:59:35 Oh, okay.

Maj. Jordan: 00:59:35 So you have a lot of bodies. Um.

Gostomski: 00:59:36 That explains why I run into so many, so many people my age from Lackland. There you go.

Maj. Jordan: 00:59:42 Exactly.

Maj. Jordan: 00:59:43 A lot of older people here. Um. Randolph's main mission is to train instructors. Um. And then from here, they'll go out to the pilot training bases and instruct new students.

Gostomski: 00:59:56 Am I wrong in thinking these are, uh, with Lackland and Randolph combined, this is the same training as one of the largest Air Force cities in the United States?

Maj. Jordan: 01:00:04 Oh, that's right. Yeah. They call us, I think, Military City USA.

Gostomski: 01:00:07 Okay.

Maj. Jordan: 01:00:07 Common term.

Maj. Jordan: 01:00:10 The great thing about this truck, [inaudible 01:00:12] parking.

Gostomski: 01:00:14 Yeah. Good luck, uh, parallel parking my dad's 350. I used to drive that thing in high school. And, uh, I don't mind driving a, a big truck all the time, but I, yeah, absolutely, give yourself like stress ulcers trying to park that thing.

Maj. Jordan: 01:00:30 Yeah. I've gotten this thing in tighter spots. (laughs)

Gostomski: 01:00:32 (laughs)

Maj. Jordan: 01:00:32 It's pretty amazing. It's almost like a challenge. Can't hit the Aggie truck.

Gostomski: 01:00:42 Aggie's got to stick together. So I'm told.

Maj. Jordan: 01:00:47 Yep. We got a couple of Longhorns that are screwing it up.

Gostomski: 01:00:50 Oh. That's unfortunate, isn't it?

Maj. Jordan: 01:00:52 Always giving each other a bunch of crap.

Gostomski: 01:00:53 (laughs) I'm just gonna throw this in the can. Yeah. Yeah.

Maj. Jordan: 01:01:05 I usually don't lock it. Do you want me to lock it for you?

Gostomski: 01:01:06 Ah. It's A-OK. Whatever you would like to do.

Maj. Jordan: 01:01:06 People don't mess with it on base.

Gostomski: 01:01:07 Yeah. I was gonna say, there's not too many more secure places that we could be parked probably.

Maj. Jordan: 01:01:17 Yeah. That's [crosstalk 01:01:17].

Gostomski: 01:01:18 Yeah. Absolutely.

Maj. Jordan: 01:01:19 It's like a different community almost.

Gostomski: 01:01:24 So you said you've been stationed, uh, here at Randolph for three years, right? Where were you stationed before that, if I can ask?

Maj. Jordan: 01:01:29 Yeah. I was in Creech Air Force Base, which is in Nevada. And, um, and I went to South Dakota, uh, Ellsworth Air Force Base, near Rapids City. Um. And here, I've been at this squadron for about [inaudible 01:01:52].

Gostomski: 01:01:51 Right. I think I read, I feel like I read a lot about Creech, Creech Air Force Base in Nevada being kind of an epicenter of a lot of the, of the, um, of the, uh, ... What is the term we just discussed about?

Maj. Jordan: 01:02:04 Operations, I guess.

Gostomski: 01:02:06 Yeah. Of Operations.

Maj. Jordan: 01:02:07 Yeah. We, uh, we have a lot of squadrons there. Um. And, and we're growing. Trying to get more [inaudible 01:02:14].

Maj. Jordan: 01:02:13 Alright, um, some coffee?

Gostomski: 01:02:27 Um. Actually, I'm A-OK. I had a couple cups before I left this morning.

Maj. Jordan: 01:02:30 There we go.

Gostomski: 01:02:30 What are we looking at there on the TV?

Maj. Jordan: 01:02:32 Ah, it's kind of new, some, some highlighted footage, if you would.

Gostomski: 01:02:35 Oh. Okay. Gotcha. And so that would be, that would just be footage from, um, from unmanned vehicles I guess? Or-

Maj. Jordan: 01:02:43 Exactly.

Gostomski: 01:02:44 I gotcha.

Gostomski: 01:02:59 I was studying in a, in Oman over the summer and, uh, the only thing we had to do for three straight months was to play foosball.

Maj. Jordan: 01:03:08 Ha.

Gostomski: 01:03:08 So. If ever want to have a tournament-

Maj. Jordan: 01:03:10 They might be pretty good by now.

Gostomski: 01:03:11 ... it's about, it's about the only ... If you can call it a sport, it's sport I'm best at. That's for sure.

Maj. Jordan: 01:03:20 Alright. So this ... I'll start off with the big fact. This is the sole source for making RPA pilots.

Gostomski: 01:03:27 Okay.

Maj. Jordan: 01:03:27 This building.

Gostomski: 01:03:28 For making what kind of pilots? Sorry.

Maj. Jordan: 01:03:29 Remotely piloted aircraft.

Gostomski: 01:03:31 Okay. RPA pilot.

Maj. Jordan: 01:03:33 Um. They are, we graduate 384 pilots per year, so a lot.

Gostomski: 01:03:40 Right.

Maj. Jordan: 01:03:46 These are all the classes here that you graduate they make some kind of silly photo in. Have their patch on there.

Gostomski: 01:03:51 Alright.

Maj. Jordan: 01:03:51 Here's an example of an MQ-9.

Gostomski: 01:03:55 An MQ-9 you said?

Maj. Jordan: 01:03:56 Yeah. This is the one I fly.

Gostomski: 01:03:57 Alright.

Maj. Jordan: 01:03:57 It's got a thousand horsepower engine and a turbo prop meaning it's a jet, drives a prop.

Gostomski: 01:04:04 Right.

Maj. Jordan: 01:04:05 Uh. These are 500 pound laser guided GP-12s and then hiding underneath here are, are, uh, Hellfire missiles. About 100 pounds.

Gostomski: 01:04:14 Wow.

Maj. Jordan: 01:04:15 Army missile originally. Um, but turned it into a air-to-ground missile for, for personnel, anti-personnel.

Gostomski: 01:04:22 Right.

Maj. Jordan: 01:04:23 This is our camera here where we get our video feed and it also has a laser on there that will guide to the seeker. Um.

Gostomski: 01:04:31 What, do these cameras, this is just, uh, a technical point but are they typically always infrared or they have different spectrums?

Maj. Jordan: 01:04:37 We have, we have Day TV, which is like your normal camera-

Gostomski: 01:04:39 Sure.

Maj. Jordan: 01:04:40 ... and IR.

Gostomski: 01:04:41 Okay. Very interesting. Gotcha.

Gostomski: 01:04:46 And normally, I mean, is the resolution on this camera's good enough, I mean, can you zoom in all the way on the ground to, I mean, what kind of features would you be able to distinguish?

Maj. Jordan: 01:04:49 You, you ... I can't get into the features and the details but you can zoom in and, and get the fidelity you, you need and obviously-

Gostomski: 01:04:58 Right.

Maj. Jordan: 01:04:59 ... the closer you get the better the feed.

Gostomski: 01:05:00 Okay. Yeah. That makes perfect sense.

Gostomski: 01:05:02 And at what altitude do they normally fly at?

Maj. Jordan: 01:05:04 Uh. Can't be specific on that either but-

Gostomski: 01:05:06 Oh. I understand.

Maj. Jordan: 01:05:07 ... what other aircraft fly at, we at those altitudes.

Gostomski: 01:05:10 Okay.

Maj. Jordan: 01:05:10 'Cause it's just as powerful with the engine to, to get in those altitudes.

Gostomski: 01:05:14 That makes perfect sense.

Gostomski: 01:05:15 And each of these squadrons have their own patch?

Maj. Jordan: 01:05:18 Yeah. This, this would be a flight, uh, a student flight that goes through and it's a group of 12 folks, uh, in each flight. And we'll walk past these flight rooms here.

Gostomski: 01:05:27 Okay.

Maj. Jordan: 01:05:28 And they work together. They, uh, and they get through our syllabus and then graduate together.

Gostomski: 01:05:32 Oh. Fantastic.

Maj. Jordan: 01:05:33 So they come up with these, these funny patches. They're, some of them are pretty clever.

Gostomski: 01:05:37 What kind of, uh, walks of life generally would you say that students end up coming from?

Maj. Jordan: 01:05:41 All over. Um. I had a Harvard graduate. Uh.

Maj. Jordan: 01:05:46 Yeah. Break it.

Gostomski: 01:05:48 (laugh)

Maj. Jordan: 01:05:49 Um. Harvard graduate that was at the Boston Marathon when the pressure-

Gostomski: 01:05:54 Ah man.

Maj. Jordan: 01:05:54 ... cooker bombs went off.

Gostomski: 01:05:55 Wow.

Maj. Jordan: 01:05:56 Um. So he decided to join the Air Force and become an RP pilot. And then we got an Academy guy. We've got Aggies, which is cool. Um. A new Baylor guy. And he's still my good friend up in California. Now he's [inaudible 01:06:10]. All over. Um. So.

Gostomski: 01:06:14 That's diverse backgrounds for sure.

Maj. Jordan: 01:06:16 Yeah.

Gostomski: 01:06:17 Generally, generally when people enter the program, do they already have military experience? Um.

Maj. Jordan: 01:06:21 Uh. Nope. Um. We have increased the, uh, age requirement-

Gostomski: 01:06:26 Okay.

Maj. Jordan: 01:06:27 ... uh, um, restriction. So we're, we're starting to get some older-

Gostomski: 01:06:31 Right.

Maj. Jordan: 01:06:31 ... people that might have been enlisted and became officer and, uh, just start later on in their career.

Gostomski: 01:06:37 That makes sense. Yeah.

Maj. Jordan: 01:06:38 So, yeah, all walks of life.

Gostomski: 01:06:41 And do you know what the rationale was for increasing the, the, uh, age limit? Um. Or was that, I mean, just an administrative decision?

Maj. Jordan: 01:06:48 Uh. Well our commitment and, yeah, I'll just be guessing, but our commitment after you're done here is six years.

Gostomski: 01:06:56 Uh huh. (affirmative)

Maj. Jordan: 01:06:57 Compared to 10 years of, of traditional pilot training.

Gostomski: 01:07:00 Okay.

Maj. Jordan: 01:07:01 So less commitments, you can be a little bit older and still make your commitment.

Gostomski: 01:07:04 Oh. Okay. That makes perfect sense.

Maj. Jordan: 01:07:06 In 20 years you could serve.

Maj. Jordan: 01:07:07 Um. There. See.

Gostomski: 01:07:16 So what are we looking at right now?

Maj. Jordan: 01:07:18 Um. We are looking at a T-6 simulator.

Gostomski: 01:07:19 Okay.

Maj. Jordan: 01:07:20 One. [inaudible 01:07:23] Nine maybe. Those seat about nine.

Maj. Jordan: 01:07:32 Um. So our version of, of pilot training is simulator only. And we fly the T-6 simulator. These are all simulator bays.

Gostomski: 01:07:45 Oh. Okay.

Maj. Jordan: 01:07:50 And I'll talk to ya about the timeline later. I have a great graphic, if I can find it.

Gostomski: 01:07:55 Yeah. I'd love to see that. Absolutely.

Maj. Jordan: 01:07:56 So this one-

Gostomski: 01:07:57 Oh wow. Okay.

Maj. Jordan: 01:07:58 ... So you have the cockpit and then the instructor's station is back here.

Gostomski: 01:08:02 Right.

Maj. Jordan: 01:08:03 And so all the functionality of, of a traditional T-6.

Gostomski: 01:08:07 And a T-6 being the, the, uh-

Maj. Jordan: 01:08:09 This a trainer.

Gostomski: 01:08:12 Sure.

Maj. Jordan: 01:08:12 Um. Guys sit right behind each other. You know, single engine. I'll show you a, a model of one when we go outside.

Gostomski: 01:08:21 So we're looking at kind of the cockpit sort of area. And this is what, uh, an actual, um, operator would sit in when they are working like day to day in the field or-

Maj. Jordan: 01:08:31 No. No. No. This is not a, uh, remotely piloted aircraft.

Gostomski: 01:08:34 Okay. This is, so this is, so this is-

Maj. Jordan: 01:08:34 This is a simulator of a training aircraft.

Gostomski: 01:08:39 Oh. Okay. I understand. I understand.

Maj. Jordan: 01:08:41 And the training aircraft is just used for pilot training and our initial qualification as a pilot.

Gostomski: 01:08:46 Oh. Okay. I see. So they would be qualified to fly, uh, a manned plane as well I suppose.

Maj. Jordan: 01:08:52 Not, not when they're done, they're not qualified.

Gostomski: 01:08:54 Okay.

Maj. Jordan: 01:08:55 This is just our way of getting 'em the skill set, uh, and we do so by not flying actual aircraft.

Gostomski: 01:09:02 Okay.

Maj. Jordan: 01:09:03 We just do it with a simulator.

Gostomski: 01:09:03 That makes sense.

Maj. Jordan: 01:09:04 A different level of proficiency is required for manned aircraft versus unmanned craft, you know, remote piloted aircraft.

Maj. Jordan: 01:09:10 So we, uh, we use the simulator and it works, works great.

Gostomski: 01:09:16 Can I ask what your opinion is of why there's a different level of skill involved? I guess as someone who doesn't know.

Maj. Jordan: 01:09:23 Yeah.

Gostomski: 01:09:23 Looking at it, it's like here ... If you're sitting there and you're having to fly, um, an airplane essentially, right? Take off, land, and not run into other airplanes, I guess. The things that in my mind are the important things when you're flying. Um. But you have to do it all with, I guess with less sensory input, right?

Maj. Jordan: 01:09:40 Right.

Gostomski: 01:09:40 So it seems like you would, you have to be more qualified, um, at least that it would involve more training than a normal aircraft. So I guess I'm a little confused.

Maj. Jordan: 01:09:46 It, it's fairly straight forward, um, if you think through it. Um. I've have flown in MQ-9s for six years.

Gostomski: 01:09:54 Okay.

Maj. Jordan: 01:09:54 And I've never landed or taken off. So I don't need that skill set.

Gostomski: 01:10:02 Is that ... Do they do that on their own? Or-

Maj. Jordan: 01:10:04 There's a special crew that does take offs and landings.

Gostomski: 01:10:06 Oh. Okay. I see.

Maj. Jordan: 01:10:08 And the reason for that is there is a little bit of a satellite delay.

Gostomski: 01:10:11 Okay.

Maj. Jordan: 01:10:11 Um. So you need the reaction time of, of being next to the runway and having that line of sight connection.

Gostomski: 01:10:17 I see.

Maj. Jordan: 01:10:17 So there's, there's crews that do that. So I don't need that skill set.

Maj. Jordan: 01:10:21 Um. Additionally, think of the, the support network you have behind you like we talked about earlier.

Gostomski: 01:10:26 Right.

Maj. Jordan: 01:10:27 You have that there to aid you in your decision making.

Gostomski: 01:10:31 Oh. Okay. I see.

Maj. Jordan: 01:10:33 And then auto pilot helps out for the mechanical skills of flying. Help you hold on-

Gostomski: 01:10:40 Okay.

Maj. Jordan: 01:10:41 [inaudible 01:10:41].

Gostomski: 01:10:42 So if you were, if you were for instance flying like a mission where you, you had significant travel time or something like that, you might not even be involved until you're close to the target, is that how that work?

Maj. Jordan: 01:10:51 You'd be monitoring, but you're not actively flying per se. Um.

Gostomski: 01:10:55 Okay. I see.

Maj. Jordan: 01:10:57 [inaudible 01:10:57] auto pilot.

Gostomski: 01:10:57 Oh. Okay. That's very interesting. So that's just-

Maj. Jordan: 01:11:00 It's easier to fly.

Maj. Jordan: 01:11:01 Um. The last piece is the connectivity. So, uh, what we need to have our pilots smart on is air space, navigation, um, the rules, procedures of flight.

Gostomski: 01:11:17 Right.

Maj. Jordan: 01:11:18 Um. And that's what we're training here is, uh, the basic fundamentals of prioritization, uh, talking with your crew, but also knowing the rules and regulations of the air space you're flying within.

Gostomski: 01:11:32 Okay.

Maj. Jordan: 01:11:32 And, and that's what we're really trying to impart on our guys here.

Gostomski: 01:11:36 Absolutely. Wow.

Maj. Jordan: 01:11:37 So. Because it's, uh, unique, we can, we can reduce the training and still produce the product, uh, to the next level of the training pipeline. 'Cause after here they'll go on to learn how to fly the MQ-9.

Gostomski: 01:11:53 Right.

Maj. Jordan: 01:11:54 Or the RQ-4, um, and become more specialized and then they'll go onto their final unit.

Gostomski: 01:12:00 I, I think you may have already said this, but how long does that whole process take from start to finish?

Maj. Jordan: 01:12:05 I'll, I'll wait until I see, I get the graphic.

Gostomski: 01:12:07 Okay. Sure thing.

Maj. Jordan: 01:12:08 And it'll, I like visuals.

Gostomski: 01:12:09 No. Absolutely. Same.

Maj. Jordan: 01:12:10 (laughs) Yeah.

Gostomski: 01:12:12 (laughs) Makes things a little bit easier for me.

Maj. Jordan: 01:12:14 But, but that's why. That's why it's different. Um.

Gostomski: 01:12:16 Okay. Sure thing.

Maj. Jordan: 01:12:17 Than what the traditional pilots do.

Maj. Jordan: 01:12:19 But we try to keep it the same. This is the same aircraft that the, uh, traditional pilot training students would fly. The T-6.

Gostomski: 01:12:26 And does that happen here as well?

Maj. Jordan: 01:12:28 Um. For instructors.

Gostomski: 01:12:30 For instructors. Okay.

Maj. Jordan: 01:12:31 We teach the instructors here and then they go out to the pilot training bases and then that's where the students learn to fly.

Gostomski: 01:12:36 Gotcha. Okay. That makes perfect sense. Very neat.

Gostomski: 01:12:41 This is pretty cool. This is, uh, it's a long way from when, uh, my grandpa used to show me pictures. He

built the, they built the first flight simulators for the Apollo missions.

Maj. Jordan: 01:12:48 Wow.

Gostomski: 01:12:49 It's just some due in a chair, you know? (laughs)

Maj. Jordan: 01:12:50 (laughs) Yeah. Yep.

Gostomski: 01:12:50 You know, so, they've come a long way from that from this whole 360 projection deal. It's very cool. Alright. Excellent.

Maj. Jordan: 01:12:55 And now it's getting into the virtual reality too, so it's just taken another step.

Gostomski: 01:12:58 Yeah. Absolutely.

Maj. Jordan: 01:12:59 And we can link these sims together, which gives great training for, um, hearing other people on the radio. Deconflicting-

Gostomski: 01:13:07 Oh. Wow. Okay.

Maj. Jordan: 01:13:08 ... um, so you get a dynamic environment.

Gostomski: 01:13:11 So you could have people flying a mission together or something like that in training.

Maj. Jordan: 01:13:14 Exactly. Exactly.

Maj. Jordan: 01:13:18 Alright. So, um, that is the, uh, what we call RIQ. Remotely Piloted Aircraft Instrument Qualification.

Gostomski: 01:13:27 Okay. RIQ.

Maj. Jordan: 01:13:29 Hey, [Gitty 01:13:31]. Hey, sir. [inaudible 01:13:31]

Maj. Jordan: 01:13:31 Trying to give you the scope of our squadron. Um. Everybody in red here is a civilian.

Gostomski: 01:13:43 Okay.

Maj. Jordan: 01:13:43 Green are, are military. So we have a lot of retired instructors, uh, that teach our students.

Gostomski: 01:13:49 Okay. I see.

Gostomski: 01:13:50 And so these would all be people who are responsible for, for, um, helping certify RIQ or-

Maj. Jordan: 01:13:57 Yeah. Part of 'em is RIQ and then we also have RFC, which is Remotely Piloted Aircraft Fundamentals Course.

Gostomski: 01:14:05 Okay.

Maj. Jordan: 01:14:05 Think of that like what Randy was talking about with [stratagery 01:39:26] and rules, um, command and control structure.

Gostomski: 01:14:15 Sure.

Maj. Jordan: 01:14:16 Just a basic introduction to warfare and, and where you fit-

Gostomski: 01:14:19 Okay.

Maj. Jordan: 01:14:20 ... in, in that process. So that's about, uh, uh, small [inaudible 01:14:25] process. And then BSOC, Basic Sensor Operator Course. So the, the folks that are driving our cameras-

Gostomski: 01:14:32 Okay.

Maj. Jordan: 01:14:33 ... go through a separate course. And they meet up in, uh, RFC to work together as a crew. So pilots are, are officers. And now we also have enlisted pilots.

Gostomski: 01:14:45 Okay.

Maj. Jordan: 01:14:46 And then the Sensor Operator and enlisted and they meet up in Remotely Piloted Aircraft Fundamentals Course.

Gostomski: 01:14:53 So when you say, um, a Sensor Operators, so are these people, like the camera is being operated separately-

Maj. Jordan: 01:14:58 Exactly.

Gostomski: 01:14:59 ... from the aircraft?

Maj. Jordan: 01:14:59 Exactly. As a pilot, I'm flying the aircraft and he's controlling where the camera's looking, zooming in and zooming out, changing the camera angles.

Gostomski: 01:15:05 I see. And do those individuals, do they sit side by side or-

Maj. Jordan: 01:15:08 Side by side.

Gostomski: 01:15:09 Okay.

Maj. Jordan: 01:15:10 Pilot, co-pilot. The co-pilot-

Gostomski: 01:15:11 Oh. I see.

Maj. Jordan: 01:15:13 ... is your Sensory Operator.

Gostomski: 01:15:13 I see. Okay. Very interesting. I wouldn't worry about ...

Maj. Jordan: 01:15:17 Um. There's another graphic we can look at. This is kind of our vision. Um. Nothing really pertinent on it but we're, we're trying to become the best, uh, better at our job.

Gostomski: 01:15:27 Within five years, the 558th Flying Training Squadron will be the premiere flying training squadron in the Department of Defense. We will ... Let's see. We will explore and develop efficient, realistic training opportunities and implement methods to effectively incorporate them into our flying training. And we will continue to grow all of our airmen, while ensuring all of our graduates have foundational knowledge of both aviation principles and employment of remotely piloted aircraft.

Gostomski: 01:15:49 So that's like a mission statement for the-

Maj. Jordan: 01:15:50 Exactly. So that fundamental knowledge, that's kind of what I was trying to describe.

Gostomski: 01:15:54 Okay.

Maj. Jordan: 01:15:55 'Cause we're the first building block for their skill set.

Gostomski: 01:15:58 Alright. I see.

Maj. Jordan: 01:15:59 Um. So this, this aircraft, the MQ-1, has been retired. Um. This is the MQ-9 that I showed you earlier with the, the bomb and missiles there.

Gostomski: 01:16:08 Right.

Maj. Jordan: 01:16:09 And then this aircraft is the RQ-4. Um. Are you familiar with the U-2?

Gostomski: 01:16:14 I am not at all.

Maj. Jordan: 01:16:15 U-2 is a, uh, high-altitude reconnaissance squadron.

Gostomski: 01:16:18 Okay.

Maj. Jordan: 01:16:19 Reconnaissance airplane. And this is the unmanned early pilot aircraft equivalent.

Gostomski: 01:16:24 Okay.

Maj. Jordan: 01:16:25 It's a very large aircraft. It's got a jet engine. Um. This is a one fifth scale of that aircraft.

Gostomski: 01:16:32 Oh. Wow. And we're looking at something that's, I mean, that's-

Maj. Jordan: 01:16:34 It's huge.

Gostomski: 01:16:35 ... a man and half laying down

Maj. Jordan: 01:16:36 Yeah.

Gostomski: 01:16:37 ... in length. And then wingspan. That's probably, is that 20 feet? 25 feet wingspan?

Maj. Jordan: 01:16:42 Yeah. It's like the wingspan of a 737.

Gostomski: 01:16:44 Oh. Wow.

Maj. Jordan: 01:16:45 It's huge. Um.

Gostomski: 01:16:48 (laughs)

Maj. Jordan: 01:16:48 Huge airplane. Um. Bigger than the MQ-9.

Gostomski: 01:16:49 Wow.

Maj. Jordan: 01:16:49 Uh. There are some more models here we can look at to kind of ... And these are not to scale. 'Cause the RQ-4 would be a significantly larger.

Gostomski: 01:16:58 Right.

Maj. Jordan: 01:16:59 Um. So that's a retired one.

Gostomski: 01:17:01 So this is probably the most famous one here, the MQ-1 Predator, right?

Maj. Jordan: 01:17:05 Yeah. That's when it first came out and it was under powered, uh, had a hundred horsepower engine that was just an-

Gostomski: 01:17:12 Okay.

Maj. Jordan: 01:17:12 ... uh. I flew it. It, it was, uh, slow but it was efficient.

Gostomski: 01:17:18 Slow. Efficient. Has a big head. (laughs)

Maj. Jordan: 01:17:20 Exactly. That's where the, the satellite dish is, sits in and gets the signal.

Gostomski: 01:17:24 Okay.

Maj. Jordan: 01:17:27 Um. And this is, uh, the bigger brother, which I like pilot [crosstalk 01:17:28].

Gostomski: 01:17:28 The MQ-9 Reaper.

Maj. Jordan: 01:17:29 Exactly.

Gostomski: 01:17:30 And this is, so is this, I mean, essentially the same aircraft but with more power? I mean is that-

Maj. Jordan: 01:17:34 Um. Yeah. More power. More fuel. Um. Bigger payload. To put it simply. Yeah.

Gostomski: 01:17:41 Alright. Okay.

Maj. Jordan: 01:17:42 Some, same concept, same, uh, control structure.

Maj. Jordan: 01:17:49 These are the wings of our new guys. Pilots and ... other wings ... Never mind. These are the ones we give to pilots.

Gostomski: 01:17:59 Okay.

Maj. Jordan: 01:17:59 You can see they're a little bit different.

Gostomski: 01:18:01 Than that. This is just the Air Force insignia?

Maj. Jordan: 01:18:03 This is the traditional pilot wings.

Gostomski: 01:18:05 Okay.

Maj. Jordan: 01:18:06 So I went through traditional pilot training and then volunteered for RPAs. So I did the full pilot training. Um. They don't go through the same training so they, um, just get different wings.

Gostomski: 01:18:16 Gotcha. Okay. I understand. So this one is the one with the shield on the front. Then you have the, this one has the shield with the lightning bolt-

Maj. Jordan: 01:18:23 Yeah. [crosstalk 01:18:23]

Gostomski: 01:18:23 ... striking the earth.

Maj. Jordan: 01:18:24 Yeah. It's got the globe. Yep.

Gostomski: 01:18:27 Awesome. That's actually a pretty cool insignia there.

Maj. Jordan: 01:18:28 Yeah.

Gostomski: 01:18:28 This is the insignia here for the 558?

Maj. Jordan: 01:18:30 Yeah. We're the Phantom Knights.

Gostomski: 01:18:33 Okay.

Maj. Jordan: 01:18:34 That's our insane insignia.

Gostomski: 01:18:36 That's actually a pretty cool insignia. I don't know. Who designs this stuff, out of curiosity?

Maj. Jordan: 01:18:39 People from the '40s. Whenever the squadrons split up, they made the, the designs. We, we keep them because of the heritage of everything.

Gostomski: 01:18:46 Yes. Absolutely. Well, it's pretty cool looking too. So (laughs) you got that going for you.

Maj. Jordan: 01:18:51 This is our Hellfire. This was originally a Army missile. And we changed it to, uh, be from a tank, anti-tank missile-

Gostomski: 01:19:00 Okay.

Maj. Jordan: 01:19:01 ... uh, to a anti-personnel missile. And, and the way we did that was we put a sleeve around here and think of a, a metal sleeve.

Gostomski: 01:19:08 Okay.

Maj. Jordan: 01:19:08 And we scored it. Um.

Gostomski: 01:19:11 Okay.

Maj. Jordan: 01:19:12 So when it impacts, it throws out shrapnel.

Gostomski: 01:19:14 Oh. Okay. Interesting. Very interesting.

Maj. Jordan: 01:19:16 Um.

Gostomski: 01:19:16 So this is the AGM-114 Hellfire. But this one doesn't have the sleeve?

Maj. Jordan: 01:19:22 This one does not.

Gostomski: 01:19:22 Okay. I understand.

Maj. Jordan: 01:19:22 This one is a dead missile.

Gostomski: 01:19:24 Okay. Gotcha.

Maj. Jordan: 01:19:25 For display. Inert.

Gostomski: 01:19:27 Inert. As you would hope, I guess.

Maj. Jordan: 01:19:32 Yeah. Anti-guidance missile.

Maj. Jordan: 01:19:33 Uh. Oh yeah. So that's the size of a missile. And then over here is the 500 pound, GBU-12 laser-guided weapon.

Gostomski: 01:19:40 Wow.

Maj. Jordan: 01:19:41 [inaudible 01:19:41] laser guide packs hit here.

Gostomski: 01:19:42 Right.

Maj. Jordan: 01:19:43 Um. But it's a dom, it's a dumb bomb. It's just a nose and tail that make smart and able to follow the laser to the target.

Gostomski: 01:19:53 Very interesting.

Maj. Jordan: 01:19:54 These fins traditionally, uh, retracted and when it drops away from the aircraft they expand like you see it here.

Gostomski: 01:20:01 And are these what's, what are involved in steering the, the bomb or-

Maj. Jordan: 01:20:04 Exactly.

Gostomski: 01:20:04 Okay. I see. Right. That's very interesting stuff right there.

Gostomski: 01:20:09 I remember when I was in high school, I went to, uh, Southwest Research Institute over here, back, I guess, in 2015. And they have a whole DOD Research Center over there and those guys were still working on a ... Not this stuff. This stuff is older than that.

Maj. Jordan: 01:20:22 Yep.

Gostomski: 01:20:23 On the robotic weapons technology and they were telling us all about when they ... They knew the guys that designed this stuff. That's pretty incredible how far the technology has come in a matter of a couple of decades. So.

Maj. Jordan: 01:20:32 I think the first laser guided weapons were in Vietnam.

Gostomski: 01:20:36 Oh. Wow. Really?

Maj. Jordan: 01:20:37 [inaudible 01:20:37] flew back when.

Maj. Jordan: 01:20:39 We'll go to this display case here so I can show you the T-6 ... Here it is. That little guy.

Gostomski: 01:20:45 Wow.

Maj. Jordan: 01:20:46 Looks like a prop has broken off. That's sad. Usually

Gostomski: 01:20:48 (laughs)

Maj. Jordan: 01:20:49 [crosstalk 01:20:49] Um. But you can see it's tandem seating. Um. It's looks like an old World War II fighter.

Gostomski: 01:20:55 Right. Prop plane.

Maj. Jordan: 01:20:56 It's got the, the similar engine to the MQ-9, about a thousand horsepower. Turbo prop again. Um.

Gostomski: 01:21:04 Just for reference. I have, I really do not know. So an, a thousand horsepower sounds like a huge amount but I don't know [crosstalk 01:21:09]-

Maj. Jordan: 01:21:08 Yeah. It is.

Gostomski: 01:21:09 Oh. Okay.

Maj. Jordan: 01:21:10 It's like driving a Ferrari, it's awesome.

Gostomski: 01:21:11 Oh. Okay. Fantastic.

Maj. Jordan: 01:21:13 So it's a lot of fun.

Maj. Jordan: 01:21:15 These are just some of the other historical aircraft that our squadron has flown in the past.

Gostomski: 01:21:19 Alright.

Maj. Jordan: 01:21:20 F-4 Phantom. This is B-26 Marauder. That we used to be, uh, we used to train navigators.

Gostomski: 01:21:27 Is the B-26 still in service?

Maj. Jordan: 01:21:29 No. It's long gone. No.

Gostomski: 01:21:30 Oh. Okay.

Maj. Jordan: 01:21:31 But that was a neat airplane. That's got a lot of, uh, 50 cal's on it. You can see them sticking out the side of there, the machine guns.

Gostomski: 01:21:36 Oh. Yeah. Dude. They got two on either side. Wow.

Maj. Jordan: 01:21:39 [crosstalk 01:21:39] So the pilot aim them, they would just aim the aircraft.

Gostomski: 01:21:41 Oh. These are the ones you see with the little, where there's actually gunner ports out in the back-

Maj. Jordan: 01:21:46 Yeah. [crosstalk 01:21:46]

Gostomski: 01:21:46 ... and that kind of stuff. Yeah. Okay. Well. Very interesting.

Maj. Jordan: 01:21:51 This one on the left is life support equipment.

Gostomski: 01:21:54 Is this, would you have to wear this kind of thing when you were, uh, when you were just doing training exercises or is it-

Maj. Jordan: 01:21:58 Uh. Just for like, uh, when you're flying the T-6, uh, for G it's got a parachute that the harness hooks you to.

Gostomski: 01:22:06 Okay.

Maj. Jordan: 01:22:06 And then the G, uh, suit presses your legs to keep the oxygen up in your brain.

Gostomski: 01:22:12 Right. Right. So you don't faint, I guess, right?

Maj. Jordan: 01:22:14 Exactly. Black out. Um hmm (affirmative).

Gostomski: 01:22:15 Okay. Which would be a problem if you're flying a Ferrari, I guess.

Maj. Jordan: 01:22:20 Exactly. Yes.

Maj. Jordan: 01:22:22 Um. These are our Marine, uh, small UAVs.

Gostomski: 01:22:22 Okay.

Gostomski: 01:22:22 So are these, these are actual models of a UAV, right? Like it's the correct size?

Maj. Jordan: 01:22:32 Yeah. I think that's the actual, actual size of 'em.

Gostomski: 01:22:33 Oh. Okay. So these would be something that like ... Like I think I've seen videos of this actually, where the guys-

Maj. Jordan: 01:22:37 [crosstalk 01:22:37] And that's what most people think we fly, something like, like small [inaudible 01:22:40] (laughs).

Gostomski: 01:22:41 Interesting. Okay. Huh. Now see, I was under the impression that you flew something that small, but that's pretty interesting.

Maj. Jordan: 01:22:46 Yeah. Now the Air Force doesn't fly it. The Marines do.

Gostomski: 01:22:49 Marines fly this. Okay. Huh. And do you know do people how to undergo specific training to use those? [inaudible 01:22:56]

Maj. Jordan: 01:22:56 Infantry men.

Gostomski: 01:22:57 Infantry men?

Maj. Jordan: 01:22:57 Yeah. Very, very simple training.

Gostomski: 01:23:01 Okay. Interesting. And those are gonna be almost, I would imagine exclusively for reconnaissance and stuff, right?

Maj. Jordan: 01:23:03 Yep. Yeah. There's no weapons on them or anything like that.

Gostomski: 01:23:07 Right. Right. Guess you could fly them into somebody, but ... (laughs)

Maj. Jordan: 01:23:10 (laughs) Yep. There's always that. [inaudible 01:23:15]

Maj. Jordan: 01:23:15 Alright. See if we can find that graphic for ya. [crosstalk 01:23:18]. I believe it's Engineering.

Gostomski: 01:23:28 Is there anything else you'd like to talk to me about that you think people, uh, don't understand about the job or anything like that?

Maj. Jordan: 01:23:34 No. I think we hit the highlights. Um. It, it's really the opposite of what people think we, we do.

Gostomski: 01:23:42 Um hmm. (affirmative)

Maj. Jordan: 01:23:44 Right? The, the thing out there is, hey, we kill a bunch of civilians. Well, we don't.

Gostomski: 01:23:48 Right.

Maj. Jordan: 01:23:48 We're actually the best at preventing civilian casualties, right?

Gostomski: 01:23:51 Right. Okay.

Maj. Jordan: 01:23:52 Because of all the things we talked about. The-

Gostomski: 01:23:53 The precision. Yeah.

Maj. Jordan: 01:23:55 ... the precision, the team behind you, the experts, um, the ability to fly longer, right?

Gostomski: 01:24:02 Sure.

Maj. Jordan: 01:24:02 'Cause you can, we can fly longer than a, a manned fighter.

Gostomski: 01:24:07 How does that, how does that impact, um, uh, precision? I'm just curious.

Maj. Jordan: 01:24:12 Um. I like to refer to it as tactical patience.

Gostomski: 01:24:15 Tactical patience.

Maj. Jordan: 01:24:16 So think-

Gostomski: 01:24:16 Okay.

Maj. Jordan: 01:24:16 ... of a fighter guy, he's almost out of gas. He's like, "My guys are in trouble. I gotta make this work 'cause I gotta to home." Where we have the ability to stay on station and like, okay, we're gonna wait until the situation develops to where it's lower risk.

Gostomski: 01:24:31 Right.

Maj. Jordan: 01:24:32 And, and then, um, we take the shot.

Gostomski: 01:24:35 Okay. Okay. That's very interesting. I hadn't, that is ... See, that's the kind thing I think until you have engaged with these directly, that's something that you're not gonna think of.

Maj. Jordan: 01:24:43 Exactly.

Gostomski: 01:24:44 That had not even crossed my mind, um, as a potential factor. That's very interesting.

Maj. Jordan: 01:24:48 I've, I've flown in MQ-9s for about seven years and I'm very proud of this. I've never, uh, killed anybody but the intended target. Um. And I'm very, very proud of that. And I've gone through excruciating lengths to prevent civilian casualties.

Gostomski: 01:25:06 Right. And very proud as you should be. So.

Maj. Jordan: 01:25:10 This is the graphic I was looking for, um, so kind of break it down for you. Here's manned aircraft training out here. Um. Pilot training is here. Uh. And it's about a year.

Gostomski: 01:25:23 Okay.

Maj. Jordan: 01:25:24 So if you start in Pueblo and you get like your private pilot's license equivalent.

Gostomski: 01:25:30 Okay.

Maj. Jordan: 01:25:30 We go a little bit longer than the manned aircraft. And then you go 13 months for traditional pilot training.

Gostomski: 01:25:37 Okay.

Maj. Jordan: 01:25:37 We fly the T-6. Everybody flies the T-6 initially.

Gostomski: 01:25:41 Uh huh. (affirmative)

Maj. Jordan: 01:25:41 Then you split off. You might fly the T-1 if you're gonna be like a heavy guy.

Gostomski: 01:25:44 Rock it.

Maj. Jordan: 01:25:45 Transport dude.

Maj. Jordan: 01:25:46 Or you, you fly to T-38 if you're gonna be a fighter guy.

Maj. Jordan: 01:25:50 Um. So then you break off about the six-month mark.

Gostomski: 01:25:52 Okay.

Maj. Jordan: 01:25:53 Then you go to 13 months total time, uh, and graduate with your wings at the end of pilot training at the end of 13 months. Then you go out to SEER, uh, survival, uh, evasion training basically.

Gostomski: 01:26:05 Right. Right.

Maj. Jordan: 01:26:06 Uh. And that's three or four months. And then you go to, if you're a fighter guy, you go to Introduction to Fighter Fundamentals.

Gostomski: 01:26:12 Okay.

Maj. Jordan: 01:26:13 Uh. Which is just a what it sounds like. Introduction.

Maj. Jordan: 01:26:16 Then you go to your formal training unit, where you learn to fly your F-22, your F-15, whatever fighter specific aircraft that you're gonna fly. Uh. And that's six to nine months there.

Maj. Jordan: 01:26:27 Then you go to Mission Qualification Training. Okay. Now you're at your unit you're gonna fly with in combat.

Gostomski: 01:26:31 Right.

Maj. Jordan: 01:26:32 And they tell you, okay, you know how to fly the F-15.

Gostomski: 01:26:35 Right.

Maj. Jordan: 01:26:36 But you don't know how to employ that weapons system that Randy was talking about. So now let's put in context of, of our squadron's tactics.

Gostomski: 01:26:45 Right.

Maj. Jordan: 01:26:46 Um. Here's how we're gonna drop a bomb. Here's how we're gonna shot our, our strafing runs. Whatever it might be. And you become, uh, combat certified at that point.

Gostomski: 01:26:55 Okay.

Maj. Jordan: 01:26:56 And then, uh, you might train for six months until your unit deploys. And then you deploy for six months to a year, whatever it might be. You come back. Do more training. And then that cycle continues.

Maj. Jordan: 01:27:08 Uh. And you become an aircraft commander, uh, being combat qualified.

Maj. Jordan: 01:27:13 The heavy side, is, is you still go through SEER. Still go through FTU. Learn your specific aircraft.

Gostomski: 01:27:19 Okay.

Maj. Jordan: 01:27:19 Still go to your unit, uh, and get mission qualified. Learning [inaudible 01:27:24] airdrop.

Gostomski: 01:27:24 Okay. Sure.

Maj. Jordan: 01:27:26 Uh. But you do it at earlier time compared to fighter guys.

Gostomski: 01:27:29 Okay.

Maj. Jordan: 01:27:29 And now you're a co-pilot, uh, and, and you're able to deploy and, and execute the mission.

Gostomski: 01:27:35 So and, this term co-pilot here, does that, I mean, are you still the individual flying the aircraft? Or you-

Maj. Jordan: 01:27:40 You might be. You might be just on the radios.

Gostomski: 01:27:42 I see.

Maj. Jordan: 01:27:42 Um. And they break that up between a pilot flying and pilot not flying. So pilot, co-pilot.

Gostomski: 01:27:47 Okay. I see.

Maj. Jordan: 01:27:47 Relationship.

Gostomski: 01:27:48 Alright.

Maj. Jordan: 01:27:48 And eventually you'll upgrade to the left seat and become the pilot commander and you'll have a young co-pilot next you.

Gostomski: 01:27:54 Oh. Okay. That makes sense.

Maj. Jordan: 01:27:55 It's a natural progression. Same thing with fighter. You're a wingman first and then you become a flight lead.

Gostomski: 01:28:01 Okay.

Maj. Jordan: 01:28:01 [crosstalk 01:28:01] lead then the four-ship flight lead. Uh. And you just keep upgrading instructor. So on and so forth.

Gostomski: 01:28:08 And that based on experience?

Maj. Jordan: 01:28:08 Exactly.

Gostomski: 01:28:09 Um. Right. Okay. And so this is a whole, this is a four-year process.

Maj. Jordan: 01:28:12 Right.

Maj. Jordan: 01:28:13 So, um, the orange depicts combat ready. So you can see we're combat ready a lot sooner. Um. Our pilot training here is only three months.

Gostomski: 01:28:23 Okay.

Maj. Jordan: 01:28:23 Three and a half months. And that's the T-6 simulator that I showed you.

Gostomski: 01:28:27 Right.

Maj. Jordan: 01:28:27 Uh. And then they go to RFC for two to three weeks. Remote fundamental course where the pilot and sensor meet up-

Gostomski: 01:28:34 Sure.

Maj. Jordan: 01:28:35 ... and, and get some, uh, common training. They, they fly a MQ-9 simulator. Uh. And this is what our cockpit looks like. I'm sure you've seen-

Gostomski: 01:28:42 I have actually seen pictures of this. Yeah.

Maj. Jordan: 01:28:44 Um. Pilot and Sensor Operator. And so they do some, some training there.

Maj. Jordan: 01:28:48 And then they go to their FTU and fly to MQ-9 or the RQ-4 and, and learn how to fly their aircraft.

Gostomski: 01:28:53 Okay.

Maj. Jordan: 01:28:53 Then they get to their combat unit. Again, learn the tactics.

Gostomski: 01:28:57 Right.

Maj. Jordan: 01:28:58 Then they're combat ready a lot sooner. Um. We've had-

Gostomski: 01:29:01 So just over a year here.

Maj. Jordan: 01:29:03 Yeah. We've had guys under a year, uh, combat ready.

Gostomski: 01:29:06 Wow.

Maj. Jordan: 01:29:08 So. So they get to the, the fight faster. And then not only do they get to the fight faster, they stay in the fight. Every day you're in, in combat.

Gostomski: 01:29:17 Okay.

Maj. Jordan: 01:29:17 You don't go to train and then come back home. Go to train. Come back home. Uh. Deploy. Come back home. So. Every day, you're in combat. Which is why you rack up so many hours in a short amount of time.

Gostomski: 01:29:27 Okay. And you're showing me right now on your left arm, that's a, is that a combat hours patch?

Maj. Jordan: 01:29:31 Yeah. Four thousand hours.

Gostomski: 01:29:32 Wow.

Maj. Jordan: 01:29:33 Most people retire with that.

Gostomski: 01:29:35 Wow. Okay.

Maj. Jordan: 01:29:36 And I got four thousand hours as a young Captain, so five, six years.

Gostomski: 01:29:41 Right.

Maj. Jordan: 01:29:41 Um. It just adds up because you're flying literally every day.

Gostomski: 01:29:44 All the time. Right. That's what, see that's very interesting to me.

Gostomski: 01:29:47 I don't know if this is something this is something that you can comment on or not, but there's been some journalism with, some, some of it with, with good sources and some of it with not, talking about the mental strain on pilots because they spend so much time in combat. Um. Is something that I think the general public perception, uh, is maybe flipped. People think, oh, you're sitting in like a trailer in Nevada or something, right? Like, ah, it's cushy. It's not a problem. But, I mean, at least I've read a lot of stuff that suggest it's extremely mentally taxing for pilots. I don't know what you, do you have, if you

have anything to say about that or what you think about it?

Maj. Jordan: 01:30:20 You, you make life and death decisions every day when you go to work.

Gostomski: 01:30:23 Right.

Maj. Jordan: 01:30:24 And after a certain amount of time, that it, it drains on you, right? So, um, but for all the reasons we spoke to earlier. Uh. When you pull the trigger-

Gostomski: 01:30:37 Right.

Maj. Jordan: 01:30:37 ... you, you know you're, you've identified the correct target and you've mitigated the risk, um, because of that tactical patience. So, um, for me the, the shift work I guess was the, the most difficult part. Uh. A lot of strain on the family, uh, kids and what not.

Gostomski: 01:30:57 Yeah.

Maj. Jordan: 01:30:57 Shift work can be challenging.

Gostomski: 01:30:59 No. That makes perfect sense. Yeah. Extremely long hours I would imagine if you're reaching four thousand hours. Yeah. Absolutely.

Maj. Jordan: 01:31:07 Right.

Maj. Jordan: 01:31:09 So, so that's the process. Um. So we get to combat faster and then, we get to, we get more experience overall.

Gostomski: 01:31:18 That's fantastic. That's very interesting to me. I've never seen anything like this before, uh, detailing that process. So about a year, and you guys can be combat ready and then have a whole career after that.

Maj. Jordan: 01:31:28 Right.

Gostomski: 01:31:28 In the time that it takes a normal aircraft to be trained. Wow. That's extremely interesting.

Gostomski: 01:31:38 Is there anything else you think I should, I should know about this process, or-

Maj. Jordan: 01:31:40 Nope. That was it. [crosstalk 01:31:41]

Gostomski: 01:31:42 Well, I feel like, I feel like a got more than I even expected to, to leave with. I didn't, I didn't know anything about it and now here I am, uh, I feel like, uh, I have a pretty good idea.

Maj. Jordan: 01:31:52 Better informed.

Gostomski: 01:31:52 Yeah. Yes, sir.

Maj. Jordan: 01:31:52 And that was my hope for today.

Gostomski: 01:31:54 Alright. Well, I appreciate that very, very much.

Maj. Jordan: 01:31:59 Yeah.

Gostomski: 01:32:00 Um.

Maj. Jordan: 01:32:00 I reckon that I'll drive you back out to the, uh, Visitor's Center.

Gostomski: 01:32:04 Okay. Well thank you, thank you for that.

Maj. Jordan: 01:32:05 I don't have time to stop at the 560th unfortunately.

Gostomski: 01:32:06 Uh. Totally understand.

Maj. Jordan: 01:32:06 I was going to show you the Project Aphrodite, but I highly recommend, uh, you could find it online.

Gostomski: 01:32:11 Okay.

Maj. Jordan: 01:32:11 Looking it up.

Gostomski: 01:32:12 Absolutely. Project Aphrodite. And that's, that's the one that kind of began the, uh-

Maj. Jordan: 01:32:16 Yeah. In World War II.

Gostomski: 01:32:17 Right. Understood.

Maj. Jordan: 01:32:18 There's also some Vietnam era, uh, history.

Maj. Jordan: 01:32:21 It's called the Firefly.

Gostomski: 01:32:24 The Firefly. I think I may have read something about that one before [crosstalk 01:32:26]-

Maj. Jordan: 01:32:26 I think Singer had something about it in his book.

Gostomski: 01:32:29 Yeah. That's probably where, probably where I read it.

Gostomski: 01:32:31 Well, luckily it looks like with all the rain, it's not going to get, uh, too ridiculously hot today. It'll be humid, but-

Maj. Jordan: 01:32:50 Yeah.

Gostomski: 01:32:51 ... we're not going to at the sweltering desert it has been.

Maj. Jordan: 01:32:53 I was actually gonna fly today if it cooled off. [inaudible 01:32:59]

Gostomski: 01:32:59 When you say fly, you mean, uh, like, uh, in an airplane and fly or-

Maj. Jordan: 01:33:03 Yeah. Exactly.

Gostomski: 01:33:03 Okay. Gotcha.

Maj. Jordan: 01:33:04 Yep. There's a T-38, uh, four shift, that's gonna do a flyover for Dick Cole, the Doolittle Raider that-

Gostomski: 01:33:13 Oh. That's right.

Maj. Jordan: 01:33:13 ... that we were talking about.

Gostomski: 01:33:14 That's right.

Maj. Jordan: 01:33:14 I'm gonna tag along.

Gostomski: 01:33:16 What was his name again? Sorry.

Maj. Jordan: 01:33:17 Uh. Dick Cole.

Gostomski: 01:33:18 Dick Cole. Alright. And he was one of those original Doolittle Raiders?

Maj. Jordan: 01:33:21 Yeah.

Gostomski: 01:33:22 From World War II.

Maj. Jordan: 01:33:22 Last surviving. Uh. Doolittle Raider. Great guy actually.

Gostomski: 01:33:32 That's great that y'all maintain that history like that. I think that's very important.

Maj. Jordan: 01:33:35 Uh. The smart man learns from his own mistakes. The wise man learns from the mistakes of others.

Gostomski: 01:33:41 Who said that? Or did you say that?

Maj. Jordan: 01:33:43 I just did now.

Gostomski: 01:33:44 There you go. (laughs)

Maj. Jordan: 01:33:44 (laughs) I can't remember who that came from.

Gostomski: 01:34:10 That was an incredible time in history. I know I used to, uh ... I didn't get the pleasure of knowing my great grandfather very well. Um. He died when I was only like two maybe. But my, uh, great grandmother, uh, was married to him obviously, used to tell me stories about his. I guess he was Army Air Corps before the Air Force.

Maj. Jordan: 01:34:25 Nice.

Gostomski: 01:34:26 And, uh, he, he was, um, he wasn't stationed at Pearl Harbor or anything, but my grandpa was lying in bed sick when he was about eight or nine years old and, uh, heard it on the radio and that's when he decided he was going to join the Air Force like his dad, um, is what she would tell us and that's what he would tell us. But it's pretty, pretty incredible, uh, time in history. It changed a lot about the trajectory of our nation I think.

Maj. Jordan: 01:34:53 When you think back to World War II, it's interesting how the thought of deploying to war without the possibility of coming home before it was over.

Gostomski: 01:35:07 Wow. You know? I hadn't considered that before, but that would have been completely different.

Maj. Jordan: 01:35:11 Our structure right now is we get deployed for six months and then maybe come back home and then deployed for six months.

Gostomski: 01:35:18 Right

Maj. Jordan: 01:35:18 Then come back home. Those guys deployed until the Nazis and the Japanese were defeated.

Gostomski: 01:35:26 Wow.

Maj. Jordan: 01:35:27 Without any thought of coming back. Um. It's interesting.

Maj. Jordan: 01:35:32 One of my favorite quotes is, "If you hadn't defeated your enemy in two years, you're just training them."

Gostomski: 01:35:39 Oh. (laughs)

Gostomski: 01:35:42 That's an, that's an interesting commentary on the way that we fight war now too I think potentially. Um. That's, that's very interesting. And I never considered that before. I mean, we do fight very differently now, uh, than we used to. I mean, uh, people don't deploy for four or five years at a time like you just said. I wonder how ... I mean, it'd be purely conjecture for me, as I won't even try to guess, but I got to imagine that that, that changes people psychologically in the way they view a war, the way they experience it when they come back home.

Maj. Jordan: 01:36:12 Right.

Gostomski: 01:36:33 So what's the procedure for just going up in, uh, in a small aircraft, if that's what you, uh, if you're gonna do a flyover or something like that? Just out of curiosity. Just walk into the hanger and hop in? Or-

Maj. Jordan: 01:36:43 No. We, we have, uh, what we call a brief, where we, we talk about all the details of where we're going, what time, uh, what we're gonna do, how

we're gonna do it and, uh, and weather and all that stuff. And then once we have a good plan, then we'll, okay, get ready. Put on all the gear and then we go out to the airplane and take off. Come back. We debrief. Did we do what we said we were gonna do? Yep.

Gostomski: 01:37:15 There you go.

Maj. Jordan: 01:37:16 How can we do it better? Okay. Probably messed this up. Okay. Here's how I'm gonna do it better.

Gostomski: 01:37:22 Can't do any flips while you're up there.

Maj. Jordan: 01:37:23 Yeah. Exactly.

Gostomski: 01:37:23 Okay.

Maj. Jordan: 01:37:23 Yeah.

Gostomski: 01:37:24 Gotcha.

Maj. Jordan: 01:37:25 Yeah. Thinking we made a bad decision. Okay. Why did we make the bad decision? And, uh, there's a lot of value in the, in the brief and the debrief process.

Gostomski: 01:37:34 Right.

Maj. Jordan: 01:37:35 It's really something, from the outside looking in, you don't really appreciate it. But once you've gone through it, just your day-to-day problem solving is, you look at things differently because of the brief and debrief process. It's a very methodical and thought out process.

Gostomski: 01:37:55 Yeah. I can see how that would be, uh, how that would be beneficial. And I've read a few things that suggest that part of the reason that, uh, that, uh, veterans are so, uh, sought after in the business world is partly because of their experience with that process and thinking through day-to-day actions and detailing methodically like that.

Maj. Jordan: 01:38:15 Root cause analysis. All that good stuff.

Gostomski: 01:38:17 Root cause analysis, is that a, is that a military term?

Maj. Jordan: 01:38:20 Uh. More of an academic term.

Gostomski: 01:38:22 Oh. Okay. Okay. I've never heard that before. I think I, I think I can guess what it means. (laughs)

Maj. Jordan: 01:38:27 (laughs) yeah. Try to find the-

Gostomski: 01:38:28 Yeah.

Maj. Jordan: 01:38:30 ... I like to describe as a domino. You pick that one domino out, avoided the, the error.

Gostomski: 01:38:37 Right. Right.

Maj. Jordan: 01:38:38 Well, Sam, it's been a real pleasure. Um. That's for doing the research on the, the robotics. I think it's important research and, uh, hope that you found that there's some thing you hadn't considered before.

Gostomski: 01:38:56 Oh. Absolutely. I'm walking away today with a lot more information. I probably got twice the knowledge that I did when I came in here, so I very much appreciate you being willing to meet with me. Thank you so much for that. Um.

Maj. Jordan: 01:39:06 Tell Lawrence I said hi.

Gostomski: 01:39:08 I, I will do. I need to email him actually so.

Maj. Jordan: 01:39:10 Tell him you say our squadron and you think it would be a great thing for him to come and talk to us.

Gostomski: 01:39:14 You know what? I will. I'll put that in the email for sure. You bet. Um.

Gostomski: 01:39:18 And no, I mean very much, I do want to express my sincere gratitude to you. Thank you so much.

Maj. Jordan: 01:39:23 Yeah. My pleasure.

Gostomski: 01:39:24 Not just for meeting with me, but you know, also for your service to the country.

APPENDIX B

Interview with Lt. Gen. Rick Lynch (Ret.)

23 October 2018, Baylor University, Waco, Texas

Gostomski: 00:04 We're recording. [crosstalk 00:00:05]

Gostomski: 00:05 All right, then. Well, looks like we're recording. All right, then. And do you mind saying who you are, just for the recording?

Lt. Gen. Lynch: 00:10 Yeah, I'm, uh, Rick Lynch, United States Army lieutenant general, retired.

Gostomski: 00:14 All right. Thank you, sir. And I'm Sam Gostomski, and it is the 23rd of October here at about 7:30 in the morning. Um, so I guess first things first, do you mind if I explain to you a little bit what my thesis is on? That way we're kind of on the same page.

Lt. Gen. Lynch: 00:28 Yup.

Gostomski: 00:28 Um, and also kind of gonna ask how much time you have. I don't want to take up too much-

Lt. Gen. Lynch: 00:32 We have 8:00. At 8:00 a gentleman is gonna come pick me up as part of my daily activities.

Gostomski: 00:36 Okay, sounds great. Um, so my thesis is on the ethical controversies surrounding the use of robotic weapons and primarily in the US military activity is what I'm focusing on because that's what I have the most information relating to.

Lt. Gen. Lynch: 00:51 Okay.

Gostomski: 00:52 And it's not necessarily strictly related to the US military. Um, I was focusing originally on drones or unmanned aerial vehicles. Um, I expanded that to include basically all robotic weapons. So, like, unmanned ground vehicles and that sort of thing, as well, because I think all the issues-

Lt. Gen. Lynch: 01:07 Yeah.

Gostomski: 01:08 Are pretty much the same. Um, the big question that I set out to answer was whether there is an actual difference in kind for these weapons, so whether or not these weapons are actually ethically distinct from other types of long range weapons that we've used in the past.

Lt. Gen. Lynch: 01:25 Yeah.

Gostomski: 01:26 I've pretty much already concluded, uh, by this point in my thesis that that's not the case, um, or at least that the ethical differences are not going to make a huge difference in how in how we use the weapons. But what I do conclude is that they have a very different psychological effect on the people using them, um, and the people, who are engaging with them. But I don't have any experience with the weapons firsthand, so that's why I'm trying to talk to you-

Lt. Gen. Lynch: 01:50 Sure.

Gostomski: 01:50 And the other people who do have experience with them.

Lt. Gen. Lynch: 01:52 I got it.

Gostomski: 01:53 So, that's a big part of what these questions are seeking to answer.

Lt. Gen. Lynch: 01:56 Okay.

Gostomski: 01:57 Um, so that's the gist of it. If you have any questions for me, um, starting out, I'd be happy to answer them. And then, we can just go from there.

Lt. Gen. Lynch: 02:07 No, it's fine. I understand what you're trying to do here. You're going to do this by the end of this semester, I guess. You're gonna get your thesis done?

Gostomski: 02:13 Right. Yes, sir, so I just found out it'll be probably about November 28th, roughly.

Lt. Gen. Lynch: 02:19 Okay.

Gostomski: 02:19 So.

Lt. Gen. Lynch: 02:19 About a month from now, wow.

Gostomski: 02:20 Yeah, that's right. So, I pretty much am done with writing the thesis for the most part. It's been drafted, but ...

Lt. Gen. Lynch: 02:26 And this is in pursuit of a bachelor's degree, this thesis? Wow.

Gostomski: 02:29 Uh, just for the honors program here at Baylor, we do.

Lt. Gen. Lynch: 02:32 Okay.

Gostomski: 02:33 Um, so, yes, sir, that's what I'm pursuing. So, my first major question, then, for you, um, starting off is do you think that there are ethical problems with the uses of drones? And I mean that in the broadest possible sense.

Lt. Gen. Lynch: 02:46 Yeah, let me back up and tell you.

Gostomski: 02:47 Sure.

Lt. Gen. Lynch: 02:47 So, 35 years in the army, right? Graduated West Point in 1977, so I commanded at all levels from platoon of 30 people to a corp of 65,000 people.

Gostomski: 02:59 Mm-hmm (affirmative).

Lt. Gen. Lynch: 03:00 In my last year, I was running all the Army [inaudible 00:03:02], which was 120,000 people around the world. So, I understand business and I also understand- I also understand the military. At one point in my career, the army decided to send me to MIT to study robotics.

Gostomski: 03:15 Okay.

Lt. Gen. Lynch: 03:15 So, I've got a graduate degree in robotics from the Massachusetts Institute of Technology, as of 1985. So, since that time, I've been pursuing military

application of robotics, now, for what? Almost three decades, I guess, three plus decades.

Gostomski: 03:34

Okay.

Lt. Gen. Lynch: 03:34

So I'm very attuned to the issues with unmanned systems, both ground and air. I had four years in Iraq. On one of those tours in Iraq, I actually commanded 25,000 soldiers on the battlefields in Iraq in the worst parts of Iraq. During the surge in 2007 and '8, President Bush, you know, sending additional troops into Iraq, I was part of that. We went into a place called the Triangle of Death. We turned it around into the Triangle of Life, you know, fifteen months later. During that time, 153 soldiers died on the battlefield on a place that I placed them. And 800 more came back in pieces, you know, they lost the arms, or legs, or came back with invisible wounds. So, to me, this is all a passion, right? And what I've been trying to do since I left MIT is work to get unmanned systems to remove human beings from harm's way, both ground and air, right?

Gostomski: 04:30

Right.

Lt. Gen. Lynch: 04:30

So, I did combat. I did have drones. You know, we call them unmanned aerial vehicles of all different sizes.

Gostomski: 04:38

Right.

Lt. Gen. Lynch: 04:38

That were in my formations. And we used them to some effect. And now I'm trying real hard throughout the military to get unmanned ground systems on the battlefield because of those 153 soldiers, who died on my- under my command, eighty percent didn't need to die. They could have been replaced by unmanned ground vehicles.

Gostomski: 04:58

Right.

Lt. Gen. Lynch: 04:59

And it's not about the technology. Rommel used an unmanned ground vehicle on the beaches of Normandy in World War II, 1944.

Gostomski: 05:10 I was not aware of that.

Lt. Gen. Lynch: 05:11 It was called the Goliath, you know. And it was used to, uh, navigate through mine fields and all that kind of stuff. So, if the mine blew up the Goliath, it was no big deal because it just a piece of equipment that was blown up, not a- not a human being.

Gostomski: 05:23 Hm.

Lt. Gen. Lynch: 05:25 And just two weeks ago, one of my companies that I run took, uh, 30 pharmaceutical executive to the beaches of Normandy. We toured the battlefield. And I stood here on Omaha beach, where Rommel used the Goliath weapon system. So, I just find it to be very frustrating that, today, 2018, we still don't have them in sufficient quantity to protect soldiers, and sailors, and airmen, and Marines.

Gostomski: 05:48 Okay.

Lt. Gen. Lynch: 05:50 With that as a background, let me get your question. I mean, nobody hates war more than the soldier because we're the ones that got to go fight it.

Gostomski: 06:00 Right.

Lt. Gen. Lynch: 06:01 And when I say "soldier", it's generic. I include airmen, and coast guards, and sailors. So, don't, please- don't please- please don't think I'm Army-centric. And I did have under my command in Iraq airmen, and sailors, and Marines, and a variety of people, so when I say soldiers, it's generic. So, war is a tough business. I mean, you're out there to protect our freedoms, our way of life. And as a result of that, you got to make some decisions. And at the end of the day, you know, somebody might die, it might be the bad guy. It might be the good guy. It might be innocent civilians. So, this whole ethical debate to me is superfluous.

Gostomski: 06:41 Got it.

Lt. Gen. Lynch: 06:41 Because we're still doing difficult things. I made ethical decisions everyday-

| | | |
|-----------------|--------------|---|
| Gostomski: | <u>06:44</u> | Mm-hmm (affirmative). |
| Lt. Gen. Lynch: | <u>06:45</u> | About whether or not we're going to launch this particular attack or we're going to do this. At one point in my operations in Iraq, we knew that the bad guys were all in this area. |
| Gostomski: | <u>06:56</u> | Right. |
| Lt. Gen. Lynch: | <u>06:56</u> | So, I made a conscious decision to drop 30,000 pounds of bombs in 13 seconds because I wanted to prep the battlefield, uh, for my soldiers. Before they got there, I wanted the battlefield to have been prepped. We made it a point to tell the innocent civilians in the area that they should probably leave the area because I didn't want the collateral damage of the innocent civilians, but at the end of the day, I don't know to this day whether or not there were any innocent civilians that were killed, but I do know war is a dangerous thing. It's a dangerous thing, so I will never understand this whole ethical thing about use of unmanned systems. |
| Gostomski: | <u>07:32</u> | Right. |
| Lt. Gen. Lynch: | <u>07:32</u> | Because, right now, we've got human beings out there doing that. |
| Gostomski: | <u>07:35</u> | Right. |
| Lt. Gen. Lynch: | <u>07:35</u> | I'm taking a young guy like you, and I'm making the decision that you need to go out there in harm's way. And at the end of the day, you may or may not come back and when you come back you may or may not have your arms and your legs, right? |
| Gostomski: | <u>07:47</u> | Right. |
| Lt. Gen. Lynch: | <u>07:47</u> | That's the kind of decision I'm dealing with, so I don't see an ethical issue with the use of unmanned systems, ground or air, as part of military missions. |
| Gostomski: | <u>07:55</u> | Okay. So, would it be fair to say that- maybe that the difficulties that arise in using unmanned systems are the same difficulties- difficulties that would arise in the use of weapons generally. So, you're |

saying you make ethical decisions everyday on the battlefield. Um, and those ethical decisions are probably going to have to be made regardless of whether or not you're using that type of weapon?

- Lt. Gen. Lynch: 08:16 Yeah, I think- I think you're on a good path when you don't try to separate unmanned systems from everything else.
- Gostomski: 08:22 Okay.
- Lt. Gen. Lynch: 08:23 I mean, we launch, routinely, precision guided munitions.
- Gostomski: 08:26 Right.
- Lt. Gen. Lynch: 08:26 You know, those things took off, and then they had a mind of their own.
- Gostomski: 08:29 Right.
- Lt. Gen. Lynch: 08:29 You know, they were going to where we sent them, generally, and they knew what to look for, and then when they detected that, they launched.
- Gostomski: 08:36 Right.
- Lt. Gen. Lynch: 08:36 That's what we do. That was artillery delivered munitions. If you're delivering munitions from an unmanned aerial vehicle like the Predator, it's the same concept, right? You're sending them as the human being out to, generally, where they need to be. And then, at some point in time, you know, they're going to make the decision based on your parameters you put forth.
- Gostomski: 08:54 Okay. That brings up two of my next questions. One of them was why do you think it is that people have such a generally negative reception, especially in the press, I would say, um, of the use of these weapons?
- Lt. Gen. Lynch: 09:05 Okay.
- Gostomski: 09:06 Um, and-

Lt. Gen. Lynch: 09:07 Let me get to that one first.

Gostomski: 09:08 Okay.

Lt. Gen. Lynch: 09:08 So, it's a lack of understanding of the technology. It's just really that fundamental.

Gostomski: 09:12 Okay.

Lt. Gen. Lynch: 09:13 You know, I did go to MIT in '85. And I started working in robotics for now three plus decades later. And, generally, when I'm having conversations with people that worry about the use of unmanned systems because they don't understand the technology.

Gostomski: 09:25 Okay.

Lt. Gen. Lynch: 09:25 And, oh, by the way, there's still fixated on cartoons like The Jetsons, and Rosie the robot, you know, and thinking that we're going to build robots, who are gonna go out there and do their own thing.

Gostomski: 09:37 Okay.

Lt. Gen. Lynch: 09:37 And I'm totally adamantly against that. We're never just going to say, "Here's a robot army. Go forth and do good."

Gostomski: 09:44 Okay.

Lt. Gen. Lynch: 09:45 "Tell us how it went ..." No, there's always going to be some kind of human controlling the process.

Gostomski: 09:49 Okay.

Lt. Gen. Lynch: 09:49 But your biggest issue, I think, is just the lack of understanding of technology. People are generally afraid of what they don't know.

Gostomski: 09:56 Okay. So, you actually brought up a really interesting point there, which is people's concern that these weapons will be autonomous, I guess. That's something that I've read about a lot. People, like, I think ... It was P. W. Singer wrote a whole book about these, uh, the possibility that these

weapons will become autonomous and what it would mean ethically if that happened. Um, I don't think based on what I've read ... (And you would probably be able to speak to this much better than me) that we're any closer than maybe two decades away from weapons having the capability of making decisions, um, maybe limited agency is a term that I've heard.

- Gostomski: 10:33 So, if you were to put a- a- a Predator drone in the air, and give it algorithms, and allow it to decide which targets to engage and which targets not to engage. Um, there's people who are concerned about that. Do you think that that's something that the US military would ever be willing to do? And would it makes sense in your mind, ethically, if we can prove that algorithms can make the same decisions as humans, but maybe more consistently?
- Lt. Gen. Lynch: 10:59 Yeah. Yeah, I can never see the leaders of the US military accepting some purely autonomous system out on a battlefield, making life or death decisions. I can never see that.
- Gostomski: 11:10 Okay.
- Lt. Gen. Lynch: 11:11 Even even- even if the technology allows that to happen because we're talking about humanity, here. We're talking about making life and death decisions that affect both the bad guys and the good guys.
- Gostomski: 11:22 Okay.
- Lt. Gen. Lynch: 11:22 So, even- even in today's use of, uh, Predator systems, and the Raven systems, and all of that stuff, there's still a human in the loop. A human is still making the decision, generally, where that thing's going to go, what it's going to do. And normally there's some kill safe mechanism, so if it ain't going what you wanted to do, you can stop it before it hurt somebody. So, I just never see us, as humans, relinquishing control to robots on the battlefield, allowing them to make life and death decisions. I don't- I don't see it, even if the technology were to permit it. Right now, you're

seeing the same thing with autonomous vehicles on the streets here in the States.

- Gostomski: 11:57 Right.
- Lt. Gen. Lynch: 11:58 Because technology has reached a point where maybe you could have autonomous vehicles, but you see the biggest issue right now is not the technology, but it's the litigation behind what happens when the autonomous vehicle runs over somebody, which has already happened. Because we, as humans, we just don't want to allow machines to determine who's going to live and who's going to die.
- Gostomski: 12:20 Yeah, I definitely- I definitely agree that I think there'd be a lot of resistance to that kind of change. One thought experiment that I propose in my thesis ... Um, and this is one of kind of the big questions that I'm trying to answer ... is if we lived in, like, say, a perfect world, where we could create machines with judiciary capability that we could plug in all of the requirements we have for making a decision about, um, what targets we will and won't engage ... And I actually was talking to ... a little bit tangential, when I was talking to Maj. Jordan, um, they were telling me about some of the legal procedures and checklists that have to be gone through, currently, in order to decide which targets to engage. Um, in a way, almost like an algorithm that lets them decide, at least within a margin, whether or not this targeted is someone we should consider engaging.
- Gostomski: 13:11 Um, and so in the thought experiment, the idea is that you'd have the capability of giving machine all the inputs that you would give a person, but you're able to eliminate, um, costs like the fog of war, right? Like, you don't have to worry about, um, people's emotions getting in the way or, um, incorrect, uh, recall or poor information. Um, and so you have a machine that, in theory at least, is capable of making decisions, um, based on our ethical parameters that we've set, but more quickly and more accurately than us. Um, and so, can you see, even under those circumstances, in the distant

future that being something people would be willing to accept or is that just a line that people are never going to be willing to cross?

- Lt. Gen. Lynch: 13:52 I don't know. I'd say never.
- Gostomski: 13:54 Okay.
- Lt. Gen. Lynch: 13:55 Never. You know, we- we ... You know, from the time I left West Point to the time I left the military, I focused on the fog of war and Clausewitz's pieces about the fog of war.
- Gostomski: 14:07 Right.
- Lt. Gen. Lynch: 14:07 And it's worse, now, than it used to be because there's so many variables, you know.
- Gostomski: 14:11 That's interesting.
- Lt. Gen. Lynch: 14:11 When, you know, I did just take folks to the beaches of Normandy and, generally, you had good guys and bad guys, generally. These days the lines are blurred, right? In Iraq on one of my tours, we started the Sons of Iraq Program, which, generally, we, uh, try to enlist the support of local Iraqi people help us take out the insurgency. So, on- on a Monday, as an example, there's a guy that's a high value target for me that I'm trying to either kill or capture. And the very next day he becomes part of my team because we decided we wanted to enlist him to help us fight the insurgency, right? That's about as confusing as it can get.
- Gostomski: 14:52 Right.
- Lt. Gen. Lynch: 14:52 So, you're walking down the street one day trying to kill this guy and the next day you're walking down the street holding his hand. Which is what they tend to do in the Arabic culture, right?
- Gostomski: 15:02 Right, right.
- Lt. Gen. Lynch: 15:02 I can't ever see that going away. In fact, it's more confusing, now, than it used to be. So, this idea that

we're going to develop this robot that can sort through all that stuff.

Gostomski: 15:11 Right.

Lt. Gen. Lynch: 15:11 I just ain't buying it.

Gostomski: 15:12 Okay.

Lt. Gen. Lynch: 15:13 I ain't buying it form a technical perspective. And I-I wouldn't as the commander give that robot the latitude to go out and make those decisions.

Gostomski: 15:20 Okay.

Lt. Gen. Lynch: 15:20 Because we're talking about human beings, we're talking about life and death, right? Whether or not it's an Iraqi, or an Iranian, or a Russian, or an American, it's still somebody's son or daughter.

Gostomski: 15:32 Right. What you just brought up about your time in Iraq, actually, too, um, I guess is, uh, speaks to something that really only somebody with experience can talk about, which would be, um, how do you think that these weapons are perceived by our enemies and how does that change the way that we engage them on the battlefield?

Lt. Gen. Lynch: 15:47 Yeah, so I just made a speech in Detroit last week to 250 law enforcement personnel. And I showed a video clip of ISIS using robots, so it's naive to think we're the only people pursuing this, right?

Gostomski: 16:02 Hm, right.

Lt. Gen. Lynch: 16:03 One of the companies I work with takes any manned vehicle and turns into an unmanned vehicle in less than 10 minutes. They've developed this system that goes in the seat of the vehicle.

Gostomski: 16:12 Ah.

Lt. Gen. Lynch: 16:13 And all of a sudden, now, it's an unmanned vehicle. Yeah, it's tele-operated. Yeah, there's still some human control, but ISIS is doing the same thing. That's the video clip that I showed these law

enforcement folks of ISIS outfitting a vehicle. And then, running it as a bomb into someplace that exploded, killed a lot of innocent civilians. So, it's silly to think we're doing this in a vacuum. Russia's got the capability. China's got the capability. In fact, they may have more capability. I'm not ... I no longer access classified information, so I- I'm not telling you anything. I'm just telling you what I understand about the technology.

- Gostomski: 16:46 Right, right.
- Lt. Gen. Lynch: 16:47 So, I don't think the enemy's gonna say, "Man, if they got that, you know, that's going to be a problem," because they're already getting it, themselves.
- Gostomski: 16:53 Right. Um, as in ... so, being a problem as in they wouldn't want to engage or like they're going to, uh, to escalate in new ways. I guess, could you say a little bit more about that?
- Lt. Gen. Lynch: 17:03 Yeah, uh, in- in the Middle East.
- Gostomski: 17:08 Right.
- Lt. Gen. Lynch: 17:10 I don't know why it is, but it is, the insurgency, terrorists, extremists, and criminals would- would not worry at all about the loss of life, innocent civilians. And they'd load up a human as a suicide bomber or load up a vehicle. And they'd send it right into a church, or right into shopping area, or whatever and explode it. They didn't care, right? They didn't care. We, as Americans though, we tend to care about that. You know, we want to avoid collateral damage, so I do worry about that. I do worry that as the bad guys get more sophisticated, they're going to use unmanned systems indiscriminately. And they're just going to run them into places and kill people, not caring who's there. One of the things I had to worry about all the time as part of the decision making process is collateral damage, all right? We thought about this. I am absolutely convinced Al-Qaeda, ISIS, Iran, they didn't think about it. They just blew people up.

Gostomski: 18:05 Mm-hmm (affirmative). Are there ... Um, actually, I talked to Maj. Jordan about this a bit, too, but I know there's pretty robust procedures in place, already, when we're deciding where to engage, uh, that consider things like collateral damage.

Lt. Gen. Lynch: 18:20 Yeah.

Gostomski: 18:22 Would you say that, um, the use of unmanned aerial vehicles aids in being able to adhere to those procedures more closely?

Lt. Gen. Lynch: 18:31 Yeah.

Gostomski: 18:32 And, for instance, engaging with, like, um, conventional troops on the ground or engaging with, um, conventional air force, if you will?

Lt. Gen. Lynch: 18:41 Yeah, be careful. I'm glad you brought in your research that they're more than just UAVs because that's a relatively simplistic problem ... UGVs, unmanned ground vehicles.

Gostomski: 18:52 Right, okay.

Lt. Gen. Lynch: 18:53 See, you have to look at the problem holistically.

Gostomski: 18:54 Right.

Lt. Gen. Lynch: 18:54 See, regardless of what we do in today's military, we've got a series of checklists, battle drills, and SOPs that we go through on everything, right?

Gostomski: 19:05 Right.

Lt. Gen. Lynch: 19:05 And as we go through the military decision making process, the significant portion of that is collateral damage.

Gostomski: 19:11 Right.

Lt. Gen. Lynch: 19:12 Okay. If we do this, then what happens?

Gostomski: 19:14 Right.

Lt. Gen. Lynch: 19:15 And always remember the enemy guy has a vote. So, you know, plans only survive the first contact with the enemy.

Gostomski: 19:20 Right.

Lt. Gen. Lynch: 19:20 That's another reason why you just can't put robots in charge because you might have this plan, but this plan got disrupted right away by enemy activities. So, you have to vector away from the plan.

Gostomski: 19:30 Right.

Lt. Gen. Lynch: 19:31 So, yeah, this idea of having, uh, battle drills, and checklists, and SOPs, that's just what we do in the military. And it applies to the use of unmanned systems.

Gostomski: 19:41 Okay. That makes sense. Um, more broadly, is there anything that you think people misunderstand about these weapon systems and, uh, that kind of give them ... And this relates a bit to a question that we already answered ... that give them the image that they have? And if you could tell people one thing about them that you think they don't understand, what would it be?

Lt. Gen. Lynch: 20:02 Oh, yeah. Uh, it's all about writing the letters.

Gostomski: 20:06 Okay.

Lt. Gen. Lynch: 20:06 And this is what I told the law enforcement folks. See, anybody, you know, I had to write a hundred 150 personal letters to the families of the fallen.

Gostomski: 20:14 Right.

Lt. Gen. Lynch: 20:15 I had to person be involved in 153 memorial services. Eighty percent of those kids were under the age of 25. You know, how old are you? How old are you?

Gostomski: 20:24 I'm, uh, 22.

Lt. Gen. Lynch: 20:25 Yeah. So, they're your age.

Gostomski: 20:26 Right.

Lt. Gen. Lynch: 20:29 And at the end of it all, after we did the memorial service and all this stuff, I go back in a quiet room in my office and write a letter to the families of the fallen.

Gostomski: 20:37 Right.

Lt. Gen. Lynch: 20:38 The issue we have today is 76 percent of the American public say they have no idea what our veterans are going through because less than one percent of us have served. Right?

Gostomski: 20:48 Right.

Lt. Gen. Lynch: 20:49 So, we've got a population, now, that is generally detached from the military. So, they're free to have these academic discussions about whether or not we should use unmanned vehicles because they're not the ones ... That's not their son or their daughter or they're not the ones making the decision to put those things out there. That's part of the problem. So, what we have to do is we have to get our American public educated on the US military.

Gostomski: 21:10 Okay.

Lt. Gen. Lynch: 21:10 Because we are their military. And, oh, by the way, if we had a draft, again ... Nobody's advocating a draft, but if we were to need to have a draft again, everybody would have some skin in the game. And they'd be more focused on, "What are we gonna do to save these soldiers' lives and limbs?"

Gostomski: 21:26 Right.

Lt. Gen. Lynch: 21:26 Because that's what I'm all about with unmanned systems, so we have a problem. I worked for President Bush and the Bush Institute at the, uh, thing they called the Military Services Initiative. And we just acknowledge that a issue is the fact that 76 percent of Americans say, "We don't know what the veterans want," because they're not around a veteran, right? Because less than one percent of us have served.

Gostomski: 21:45 Right.

Lt. Gen. Lynch: 21:45 So, that's the phenomenal. Really, that's the number one issue in my mind is educating the American people.

Gostomski: 21:50 Okay.

Lt. Gen. Lynch: 21:50 On a variety of things, too, including the use of unmanned systems.

Gostomski: 21:54 So, going off that, would you say, then, that it's fair to say that there is an ethical angle to consider as far as your duty to the soldier, as well? So, as a commander you have, uh, an ethical commitment to the soldier to protect them from harms way, to the extent that's possible, as their commander. So, if you can implement technology that will protect them, that's a duty of the American people and then, like, a duty of the commander, as well?

Lt. Gen. Lynch: 22:21 Yeah.

Gostomski: 22:21 Okay.

Lt. Gen. Lynch: 22:21 Yeah, I mean I started the conversation by telling you every day there's some leader out there making a decision that's life or death.

Gostomski: 22:29 Right, right.

Lt. Gen. Lynch: 22:29 Life or death. The title of my first book is Adapt or Die for a reason because if we didn't adapt on the battlefield, soldiers literally died, right?

Gostomski: 22:38 Yup.

Lt. Gen. Lynch: 22:39 Robert E. Lee said ... And I do a Gettysburg battle staff tour next week with another group of people, "Nobody hates a war worse than the soldier," you know, because we're making the decision. We're out there what? I was on patrol every day, as a two-star general, on patrol every day with my soldiers because you never tell a soldier to do something that you're not willing to do yourself. That's the essence of good leadership. That's why you had in

your questions about PTSD. I want to talk about that stuff before we ...

- Gostomski: 23:04 Oh, yeah, absolutely. Thank you.
- Lt. Gen. Lynch: 23:06 Before we stop talking because it's an important consideration. Yeah, I'm more convinced than ever that, uh, Americans don't understand the technology. And they don't understand what's going on with today's conflicts.
- Gostomski: 23:18 Right. Right.
- Lt. Gen. Lynch: 23:19 And it's just unbelievably confusing given the fog of war. Now, we talked about things being volatile, uncertain, complex, and ambiguous, VUCA, V-U-C-A. And it's that way in corporate America. And it's that way on the battlefield, now.
- Gostomski: 23:36 Okay, thanks so much for bringing up PTSD, too, because I wouldn't want to miss that. That was ... I know when I ... So, I've read a lot of literature kind of starting back from about 2001, when a lot of, um, the use of unmanned aerial vehicles began more in the public eye. Um, and since then a lot of studies have come out suggesting that, uh, drone operators or unmanned vehicle operators suffer from PTSD at roughly the same rate as their counterparts on the ground. Um, and I read a couple of firsthand interviews and in talking to Maj. Jordan, who used to fly unmanned, uh, aerial vehicles, uh, that suggest that one of the big difficulties is switching, um, from civilian life right into a combat role and then back to civilian life all in the same day. And so, that's something I wonder if you could, uh, speak to. And then, I just wondered if you had anything else that you'd like to say, um, about that issue, specifically, as it relates to- to, uh, people in this particular sphere of military engagement?
- Lt. Gen. Lynch: 24:37 Uh, it's an interesting study. So, at the National World War II museum, last week as part of the Gary Sinise Foundation, we took 40 World War II veterans and 40 high school kids to the National World War II museum in New Orleans, Louisiana.

And there's a plaque on the wall that says, "No one goes to war and comes back unchanged."

Gostomski: 24:58 Right.

Lt. Gen. Lynch: 24:59 I have no idea of Maj. Jordan background or any of that stuff. I have no idea.

Gostomski: 25:02 Sure. Sure.

Lt. Gen. Lynch: 25:03 So, I'm not- I'm not criticizing Maj. Jordan but I do know I was out there on patrol, you know, when kids got blown up.

Gostomski: 25:09 Right.

Lt. Gen. Lynch: 25:09 I was out there on patrol, and we would be taking both direct and indirect fire. I was there when I went to the hospital, when one of my soldiers lost her legs, putting a purple heart on there, while they're still in the hospital. You know, I was there.

Gostomski: 25:23 Right.

Lt. Gen. Lynch: 25:24 And I know what my soldiers were going through because I was there with them. Unbelievably complex, unbelievably difficult, and we had those memorial services. Everybody was crying because we lost a soldier, but the next day we had to go do it again. So, this whole idea of posttraumatic stress is powerful. It's something that needs- needs to be carefully considered.

Gostomski: 25:42 Okay.

Lt. Gen. Lynch: 25:42 You know, I tell people all the time that when I deal with wounded warriors ... And I'm on five nonprofit boards that are helping our wounded warriors, they say to a man that they'd rather have a visible wound than an invisible wound.

Gostomski: 25:56 Okay. All right.

Lt. Gen. Lynch: 25:58 So, I'm convinced that we've all gone to war, and come back, and different. You know, I cry more now than I've ever cried in my entire adult life. I'm

sure that has something to do with having been in combat so many times. I was in Desert Shield and Desert Storm. I was in Kosovo. I was in Bosnia. I was in Iraq on several occasions. That's up close and personal combat.

- Gostomski: 26:17 Right.
- Lt. Gen. Lynch: 26:18 I had soldiers blown up. I was picking up body parts, as opposed to the person. I don't know what it's like looking at a TV screen, making decisions about launching munitions. I don't know what that's like because I've never done that.
- Gostomski: 26:32 Right. Okay.
- Lt. Gen. Lynch: 26:33 I'm up close and personal. It's hard for me to understand or to figure out, you know, why would that person who's in, you know, Marksville, Louisiana or wherever they're launching from-
- Gostomski: 26:46 Right.
- Lt. Gen. Lynch: 26:47 Have the same problems with what they did as my soldiers, who are out there on the battlefield doing it.
- Gostomski: 26:54 Okay.
- Lt. Gen. Lynch: 26:54 Up close and personal. So, I have a- I have a problem with it. I'm not saying it's not right. I'm just saying, it could be kinda... But I do know one of the problems we're having as a nation is we've tied diagnosis of posttraumatic stress to compensation by the VA. So, if you get diagnosed with posttraumatic stress, you're 50 percent disabled right away, as a veteran. 50 percent disabled, so there's some level of compensation to come back your way. So, in many cases these youngsters are claiming to have posttraumatic stress, even though they really don't have it.
- Gostomski: 27:46 Hm, okay.

Lt. Gen. Lynch: 27:46 One of the reasons I work with Baylor University is to look for some kind of capability to do a clinical diagnosis via biomarkers or something-

Gostomski: 27:46 Sure.

Lt. Gen. Lynch: 27:46 To be able to say, "Yeah, that person has post traumatic stress. No, that person doesn't."

Gostomski: 27:46 Okay. ````

Lt. Gen. Lynch: 27:46 So, that's something that everybody's just got to be sensitive to. These days, a lot of folks are claiming to have posttraumatic stress, even though they really don't have it.

Gostomski: 27:46 Right.

Lt. Gen. Lynch: 27:46 Because they get compensated by the Veterans Administration if they get diagnosed that way.

Gostomski: 27:50 Okay.

Lt. Gen. Lynch: 27:51 So, I think it's important. And, again, I'm not- I'm not second guess anybody, who sat back here in the US and launched a drone that killed somebody over there because I've never been there. I never- I never talk about things unless I have personal experience. I just know it's different being there.

Gostomski: 28:08 Sure.

Lt. Gen. Lynch: 28:08 Does that make sense?

Gostomski: 28:09 Yeah, no. It certainly does. And I know talking to people and then based on what I've read, that for some people one of the big things that they bring up is the difficulty, um, of just knowing that you're making those life and death decisions. And then, for some people I think there's a guilt, maybe, about not being in physical proximity to the battlefield, which I- I don't know. It's an- It's an interesting topic. So, I just thought I'd bring it up.

Lt. Gen. Lynch: 28:37 In my new book, um, will come out sometime. Takes a couple of years to birth a book.

| | | |
|-----------------|--------------|---|
| Gostomski: | <u>28:42</u> | Sure. |
| Lt. Gen. Lynch: | <u>28:43</u> | Talks about taking care of people, which we're trying to do. And we are- we are in a situation where we have humans dealing with humans. |
| Gostomski: | <u>28:51</u> | Right. |
| Lt. Gen. Lynch: | <u>28:52</u> | I worry about what's going on in our nation today with these youngsters access to violent video games. |
| Gostomski: | <u>28:59</u> | Right, right. |
| Lt. Gen. Lynch: | <u>29:00</u> | So, just like the drone operator who's looking at a video screen, these youngsters are looking at video screens. And they're making decisions about life or death with a gun. It just happens to be a game, right. |
| Gostomski: | <u>29:08</u> | Yeah. |
| Lt. Gen. Lynch: | <u>29:09</u> | So, I- I don't know. I mean, are we- are we creating an environment, where these youngsters with these violent video games, they also have post traumatic stress? |
| Gostomski: | <u>29:18</u> | Okay. |
| Lt. Gen. Lynch: | <u>29:19</u> | And as a result of that, they're going into a school and doing the same thing. I don't know. It's one of those big mysteries that people can't just say, "Here's ..." It's not black or white. |
| Gostomski: | <u>29:29</u> | That leads me to one of my last questions for you, which is there has been a lot of people, who have critiqued drone warfare. Um, I keep using that term, but, uh, uh, any type of robotic warfare as devaluing the life of the enemy, which I find it to be an interesting concept. Um, I'm wondering what you have to say about that. |
| Lt. Gen. Lynch: | <u>29:50</u> | Yeah, I made a speech to- on robotics to the American Mensa Society, their annual gathering. |
| Gostomski: | <u>29:57</u> | Okay. |

Lt. Gen. Lynch: 29:57 And I was surprised with the pushback about, you know, valuing the life of the enemy. Now, we in the US military, we don't want to go out and kill innocent people, but some people deserve to die.

Gostomski: 30:10 Sure.

Lt. Gen. Lynch: 30:10 You know, because they've got ... They want to harm us. They want to take away our freedoms and our way of life. So, this idea of devaluing the enemy, I don't understand. I want to be able to separate the- the- the fence sitters from the actual bad people. So, for example, there's 16 million people in Iraq. And on any given day there's about 10,000 bad people, right? We had to figure out how do we separate the innocent people from the fence sitters. You understand the concept of fence sitting?

Gostomski: 30:40 Not completely, I don't think.

Lt. Gen. Lynch: 30:42 So, the Iraqi people, just like the American people, they want what we want. They want freedom from fear. They want to be able to provide for their family, have a job, send kids to school, and not be afraid. That's what they want, freedom from fear. But on any given day in Iraq, sometimes they were sitting on a fence because they needed the money because they didn't have a job and the insurgency would pay- would pay them \$200 to plant that roadside bomb.

Gostomski: 31:08 Okay, alright.

Lt. Gen. Lynch: 31:09 What I was trying to do is keep them on the right side of the fence.

Gostomski: 31:12 Right.

Lt. Gen. Lynch: 31:12 So, we started this- we started this Sons of Iraq Program to compensate the folks- the folks in Iraq. So, they didn't have to go to the insurgency and get paid to plant a bomb.

Gostomski: 31:22 Okay.

Lt. Gen. Lynch: 31:24 So, this idea ... I mean, there are some bad people out there. There are. And sometimes the only thing you can do is kill or capture, right? So, this idea of devaluing the human- human life of the enemy, I don't- I don't understand. Again, if more people had to write the letter when their son or daughter get killed or receive the letter, it'd be a different conversation.

Lt. Gen. Lynch: 31:43 All right. That's my 8:00, right there, so. Are we good?

Gostomski: 31:44 Well, I'll just close by saying thank you, then, I guess, is there anything else that you want to say before I start your recording?

Lt. Gen. Lynch: 31:50 Nope. But, you know how to get ahold of me, and, you know, as you mature your thoughts and wrap up your thesis here, if I could be of service, just give me a holler.

Gostomski: 31:56 Well, I appreciate that very much. [crosstalk 00:31:58]

Lt. Gen. Lynch: 31:58 [crosstalk 00:31:58], Randy Martin. So, now, you contacted [crosstalk 00:32:01].

Gostomski: 32:00 I did, yeah. He was, uh, he was at the air force base and he met with me. And, uh, Maj. Jordan because he is, I guess, the communications officer. I wasn't completely clear exactly [crosstalk 00:32:10].

Lt. Gen. Lynch: 32:09 Yeah, when I commanded the third infantry in combat, this division, the third infantry division, he was my public affairs officer.

Gostomski: 32:16 Okay.

Lt. Gen. Lynch: 32:17 So, when I went into Iraq as part of the surge, you know Randy went me. He never- he never left the headquarters. He had ... He was trying to communicate to the American people, you know, what we were doing.

Gostomski: 32:27 Gotcha.

Lt. Gen. Lynch: 32:28 Good luck to you. Good luck to you, man.
Gostomski: 32:29 Thank you, general, very much. I appreciate it.

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