PERSPECTIVE

The Strategic Context of Lethal Drones

A framework for discussion

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Introduction

The use of drones to conduct lethal strikes to disrupt and defeat terrorist groups worldwide has been at the center of a growing national debate.

The U.S. government has used lethal drone strikes since the passage of the 2001 Authorization for the Use of Military Force,[1] but recently their use has expanded at an unprecedented rate – underscoring the importance of understanding drones as tools in a larger framework.

To date, the national discussion about drone programs has focused on how targets are selected,[2] the morality of signature strikes,[3] the Presidential use of power,[4] and the identity of "victims."[5] However, this discussion does not always rely on established facts about current drone operations, including how drones function as weapons platforms, their overall role within US counterterrorism strategy, and the empirical data that currently exist about the effects of their use as lethal force.

This paper will objectively examine US lethal drone policy as it is currently implemented while contextualizing it in terms of national security and the global struggle against violent extremism.

In the interest of objectivity, this paper will not directly address the moral and political arguments about the proper use of targeted killings.

We are not evaluating the moral value of targeted killings or drones; the ways these tactics do or do not fit into US law; or whether it is "right" for a President to singularly control a targeted killing program. Similarly, while the technical (and industry-preferred term) for

these aircraft is "Unmanned Aerial Vehicles," we have chosen to use the colloquial term "drone" in the interest of readability.

This paper is not intended to be polemic for or against drones; rather, we are interested in the way in which drones are employed as viewed from a US national security strategy perspective.

Basic Data about drones

Program Descriptions

The Obama Administration has not officially stated where and how it employs lethal drone strikes. While the President has officially acknowledged that covert strikes do occur in places such as Yemen and Somalia,[6] there are no specifics about the extent of the programs and precise deployment of drones for lethal strikes.

Drones are employed differently depending on the target environment.

In a declared combat zone, such as Afghanistan,[7] there are clearly defined rules of engagement and chains of command for the execution of lethal drone strikes. [8] Outside of declared combat zones, however, there are few data about how drone strikes are decided and conducted, apart from anonymous leaks by US officials.

In Yemen, for example, there are indications that the Central Intelligence Agency and the Joint Special Operations Command operate individual "kill lists," and each commands a separate drone fleet.[9] In Pakistan, drone strikes are an open secret acknowledged even by the President,[10] but the precise rules governing their use remain murky.[11]

This official secrecy, coupled with leaks about the nature of drone programs, makes drawing conclusions about their overall use and effectiveness extremely difficult.

International Law

Criticisms of US drone programs frequently center on questions of legality. Despite claiming the strikes are legally permissible, Administration officials have not yet directly cited any law in justifying the use of drones in extraterritorial targeted killings.[12]

Critics argue that this failure to provide legal justification implicates the US in violating international legal frameworks on interstate force and national sovereignty.[13] Furthermore, critics claim that US drone programs in Pakistan, Somalia, and Yemen set a dangerous precedent that could lead to any nation with strike-capable drones employing similar tactics in a "global drone war."[14]

While laws governing the use of interstate force bar the use of force in another nation's territory during times of peace, under Article 51 of the United Nations Charter, a state has "the inherent right of individual or collective self-defence [sic]" until the UN Security Council takes action.[15]

The UN Special Rapporteur on extrajudicial, summary or arbitrary executions has affirmed that Article 51 applies if *either* the targeted state agrees to the use of force in its territory by another nation, *or* the targeted state or a group operating within its territory, was responsible for an act of aggression against the targeting state.[16]

Only one of these conditions must be satisfied to justify a unilateral extraterritorial use of force by a UN Member. In the cases of Pakistan,[17] Somalia,[18] and Yemen,[19] both conditions are satisfied: all three countries have consented, explicitly or otherwise, to the US operating drones within their territories, and all three are "safe havens" for groups that have launched violent attacks against the US and US interests.

Therefore, while the US does not explicitly invoke Article 51, it is operating within its bounds under the international framework established by the UN – making any legal argument against drone programs challenging.

In Afghanistan, Iraq, and Libya, the US was already engaged in combat operations. The legal questions regarding the use of lethal drones do not apply to these conflicts.

Cost Analysis

Some critics have argued that drones are actually more expensive to purchase and operate than piloted aircraft,[20] because they require extensive ground crews, are maintenance-intensive, and prone to frequent "mishaps," official parlance for "crashes." However, an analysis of acquisition and operating costs does not bear out such an argument.

From a high-level examination, drones are slightly more cost effective to acquire and operate than conventional manned aircraft. So the real question of cost effectiveness should instead be one of operational advantage: whether the strategic advantage and human protection afforded by the use of drones in overseas operations outweighs the potential security threat posed by higher crash rates and growing backlash in target environments.

In Table 1, below, we compare basic unit acquisition and operating costs compiled from unclassified Department of Defense Selected Acquisition Reports.[21]

We have included as much information can reasonably be found through public sources; the data are not identical for all weapons platforms, however.

The F-15, for example, is no longer manufactured so its acquisition cost is not relevant in comparisons, but is included here for valuations of mishaps.

For new platforms like the MQ-9 Reaper, the cost data include everything from personnel-related costs, fuel, training munitions, temporary duty costs, sustaining engineering and program management, system specific training, and "indirect support" (which is not defined but may include basing).

Table 1: Acquisition and operating cost comparison of several manned and unmanned aircraft.

	"Unit" according to Selected Acquisition Report (SAR)[a]	APUC /"Unit" ($mm)[b]	APUC /Aircraft ($mm)[c]	Operations &Support Avg Annual Cost/Aircraft ($K)[d]	Operations & Support Avg Annual Cost/Flying Hour/Aircraft ($K)[e]	Base Year[f]
Unmanned Aerial Systems						
MQ-1 Predator	***1 Combat Air Patrol*** *(4 aircraft, sensors)*	20.0[22]	5.0	1,210.00[g]	1.32[h]	2010
MQ-1C Gray Eagle[23]	***1 Platoon (****4 aircraft, equipment/ payload)*	106.49	26.62	7,960.00[i]	- - -	2010
MQ-9 Reaper[24]	***4 aircraft***, equipment, personnel	25.93	6.48	2,988.00[j]	3.25[k]	2008
RQ-4 Global Hawk[25]	***1 aircraft***, equipment/ payload	103.04	103.04	- - - [l]	31.12	2000
Conventional Aircraft						
F-15C	***1 aircraft***	27.9[26]	27.9	7,861.11[m]	25.69[n]	1998
F-16C/D	***1 aircraft***	14.6[27]	14.6	4,039.80[o]	13.47[p]	1998
F-22[28]	***1 aircraft***	185.73	185.73	11,255.56[q]	36.78[r]	2005
F-35[29]	***1 aircraft***	90.77	90.77	4,927.50[s]	16.43[t]	2002
A-10 Thunderbolt II[30]	***1 aircraft***	11.80	11.80	N/A	N/A	1994
AC-130H[31]	***1 aircraft***	110.00	110.00	N/A	N/A	2010
AH-64 Apache (Block III - 2014)[32]	***1 aircraft***	32.86	32.86	2,437.60	11.98[u]	2010

a The Unit per SAR is the value provided in the SAR report used measuring costs. The unit may be composed of individual or multiple aircraft and may require adjustment to reflect costs on a per-aircraft basis.

b APUC is the Average Procurement Unit Cost, denoted in millions of dollars.

c Cost per Aircraft is the APUC divided by the number of aircraft (if multiple) comprising one unit, denoted in millions of dollars.

d O&S Average Annual Cost per Aircraft is the cost of Operations and Support per Unit, including "Unit-level Manpower, Unit Operations, Maintenance, Sustaining Support, Continuing System Improvements, Indirect Support, and Other," denoted here in thousands of dollars and adjusted to reflect costs on a per-aircraft basis.

e O&S per Aircraft, if not provided in the SAR, is calculated by dividing the Average Annual Cost per Aircraft by the estimated average of flight hours per year, denoted in thousands of dollars.

f Base year is the initial year in which acquisition was valued and applies to both APUC and O&S Costs unless otherwise noted. Variations due to different cost base years should be taken into consideration.

g Cost value obtained from the MQ-9 Reaper SAR. The MQ-1 Predator is antecedent to the MQ-9 Reaper.

h Cost calculated using the estimated average of 918.7 flight hours per tail per year provided for the MQ-9 Reaper.

i Cost provided "per System." Calculated by dividing among four aircraft.

j O&S Costs for the MQ-9 Reaper are specifically noted to include fuel, training munitions, temporary duty costs, , sustaining engineering and program management, system specific training within the scope of the O&S Average Annual Cost per Aircraft. Denoted in thousands of dollars.

k Cost calculated using the estimated average of 918.7flight hours per tail per year.

l O&S Average Annual Cost/Aircraft not provided. Total annual cost per fleet estimated to be $15,591.1 million.

m Cost obtained from F-22 SAR, updated to base year 2010, and is provided per squadron of 18 aircraft. This value represents the per-aircraft cost, obtained by dividing the total annual cost per squadron of $141.5 million by 18 aircraft, denoted in thousands of dollars.

n Cost calculated using the estimated average of 306 flight hours per tail per year provided for the F-22.

o Cost calculated from the estimated average of 300 flight hours per year provided for the F-35, denoted in thousands of dollars.

p Cost obtained from F-35 SAR and is denoted in thousands of dollars. The F16/CD is antecedent to the F-35.

q Cost is provided per squadron of 18 aircraft. This value represents the per-aircraft cost, obtained by dividing the total annual cost per squadron of $202.6 million by 18 aircraft, denoted in thousands of dollars.

r Cost calculated from the estimated average of 306 flight hours per year and is provided in thousands of dollars.

s Cost calculated based on estimated average of 300 flight hours per year, denoted in thousands of dollars.

t Cost is only provided for Conventional Takeoff and Landing (CTOL) aircraft variant, denoted in thousands of dollars

u Cost calculated based on estimated average of 203.4 flight hours per year, denoted in thousands of dollars.

This table comparison indicates that, with the exception of the RQ-4 Global Hawk, drones are generally slightly cheaper to both acquire and operate than conventional fighter jets.

Conventional fighter jets, on average, require only one pilot to function; drones require an average flight crew of at least two: one pilot and at minimum, one sensor operator. However, because a drone is not operated individually, but as part of a system consisting of several aircraft, sensors, ground control, and satellite linkages, the number of personnel needed to operate a Predator Combat Air Patrol (CAP) is estimated to exceed 80 people,[33] and 128 soldiers are needed to operate a Platoon of four MQ-1C Gray Eagles.[34]

Manned aircraft also require more than just a pilot to function, but the data required to estimate the basing, maintenance, and operations personnel costs needed for a manned CAP are not readily available.

Drones do have a greater tendency toward mishaps.[35] The Congressional Budget Office states that despite an initial mishap rate of 28 incidents per 100,000 flight hours, Predator drone technology and pilot training has improved such that Predator mishap rates are around 7.6 per 100,000 flight hours. [36] Though still far above the 2.36 mishap rate of F-15s in 2011,[37] the lower per-unit cost of a drone offsets the lower crash rate but higher unit cost incurred by a single F-15 mishap.

Overall, drones present a slight cost advantage over manned aircraft.

Strategic Considerations for Lethal drones

The Strategy

The policy of using drones to conduct lethal strikes against targets inside other countries has several aspects.

The first consideration is where drone strikes are used: based on public reporting, drones have only been used to lethally strike targets in six countries: Iraq, Afghanistan, Libya, Pakistan, Yemen, and Somalia.

Three of these countries were declared combat zones: Iraq, Afghanistan, and Libya.[38] In Iraq and Afghanistan, drones played a support role to normal combat operations: providing surveillance and, when ground forces could not be used, striking targets. In Libya, drones also played a support role, though the intensity of their use far outpaced that of any other declared combat zone due to the nature of the conflict between the rebels and Gaddafi forces. [39]

Drones in declared combat zones function under explicit and well-established rules of engagement and chain of command. They are used overtly, meaning their use is a matter of public record and discussed openly. In contrast, drones used in non-declared combat zones do not function under explicit, public rules of engagement or chain of command. They are used covertly – meaning the government rarely acknowledges their use.

In declared combat zones, drones provide several advantages over traditional manned aircraft. By virtue of their unmanned operation, drones can be sent into hostile areas with no risk to the lives of pilots; they loiter for hours, unconstrained by shift schedules or human endurance; and they conduct more surveillance and collect more intelligence than humans are able to analyze.[40]

General James Cartwright, the Vice Chairman of the Joint Chiefs of Staff, explained in 2011, that during the Libya campaign the drones' longer flight times (up to 24 hours), superior sensors, low speed, and low altitude flight reduced the risk of collateral damage.[41] Drones also operate alongside traditional manned aircraft, filling a specific need for small-scale, high-precision strikes.

In undeclared combat zones, however, drones play a different role depending on the environment. Though

there have been strikes in Yemen by cruise missiles[42] and in Somalia by conventional aircraft,[43] drones play the primary role in air operations. Recent reports suggest that the airspace over Somalia is so overcrowded with drones that they have begun to pose a risk to civilian air traffic.[44] In Pakistan, lethal drone strikes are the primary tool used against suspected terrorists.[45] In Yemen, the US operates drones in conjunction with special operations forces and the Yemeni Air Force to target suspected members of al-Qaeda in the Arabian Peninsula (AQAP). [46]

There is, however, no overarching strategy for how to use drones. When incorporated into a broader strategic framework, drones have been effective at providing support to other forces seizing territory or disrupting terrorist organizations. [47] However, when drones are no longer part of a framework, but rather supplant the framework and become the strategy entirely, they can have serious political blowback.[48]

Other Considerations

Policymakers use drones to conduct lethal strikes because drones are an efficient way of targeting and killing suspected terrorists. [49] Drones offer advanced surveillance capabilities because of their Wide Field-of-View (WFOV) sensors, long flight times, and flexibility to rapidly move to new areas. Adding weapons to a drone platform makes them even more valuable to US officials, as it provides an immediate means to take action based on surveillance.

Drones have also been used to kill a number of suspected terrorists. According to the New America Foundation, drones have killed between 2,000 and 2,800 people in Pakistan since 2004, though an unknown number are non-combatants.[50] U.S. officials assert that integrating drones into counterterrorism operations has successfully disrupted non-state actors, specifically al-Qaeda.[51]

However, there is no publicly available study of the strategic effects of the drone campaigns. For example, the use of drones in Pakistan has created substantial political and social blowback in the form of anti-Americanism.[52] However, empirical data suggest that drone strikes are correlated with decreasing militant violence, though there are no data to support the argument that drone strikes *cause* decreases in violence.[53] More civilians died from terrorist violence in Pakistan in 2011[54] than in 2010.[55] During this same period of time, unofficial data compiled by the New America Foundation shows the number of drone strikes decreased from a total of 118 in 2010, to 70 in 2011.[56]

The data indicates that drone strikes are correlated with a reduction in militant violence; however, it cannot be determined that drones contribute to any long-term reduction in violence. Rather, they appear to only temporarily interrupt militant operations: very soon after the number of drone strikes decreased, militant violence in Pakistan increased again.

There are no comprehensive measures of efficacy for drone strikes. The few available empirical studies do not contain enough data for broad conclusions, and the results of drone strikes are different in different countries. This presents a challenge to developing a much-needed broader counterterrorism strategy that employs the use of drones in achieving permanent security gains It also implies that drone strikes are not sufficient to permanently disrupt some terrorist groups operating in certain environments.

Conclusion: the Need for Improved Dialogue

To date, most of the discourse about the merits of drones has been focused on moral, legal, and tactical considerations, rather than on strategy. Yet, the strategic dialogue is arguably the most important aspect of the drone debate.

Several questions remain unanswered in the current discourse:

- Is the use of this weapons platform securing American interests, or not?
- Do drones permanently degrade local insurgencies and terror groups?
- Do the security effects of a drones program justify the political consequences?
- Are drones cost efficient relative to their effects?
- Are drones part of a global strategy for dealing with terror groups, or have they become the strategy?

Answering these questions is not trivial: they are at the very heart of how effectively lethal drone strikes interact with America's national security.

Drones appear to be more cost-effective than manned aircraft, but not by much; does this make their other advantages more or less important? Drones – and the policy of targeted killings of which they are part – carry substantial social and political tradeoffs in the countries where they happen. Are these costs worth bearing for the security achieved by targeting and killing suspected terrorists?

The current discourse about drones is polarized between two opposing camps: those who think the use of drones is morally and legally unacceptable, and those who reason that drones are so cheap and effective a debate about their use is inconsequential. Both camps simplify the matter to the public's detriment. Like all weapons platforms, drones are morally neutral; the policy to use them requires debate (and no policy is perfect).

Understanding the use of drones in full context, however, is difficult. The programs are secret yet openly discussed in the press; officials acknowledge the programs anonymously but deny their existence on the record. While the Administration is quick to brag of successes, it can also be quick to hide failures or incidents of blowback.

A factual, apolitical public dialogue about drone programs and their role in superseding US counterterrorism strategy could enable a policy that balances US National Security objectives with considerations for the gray areas that accompany the use of lethal drones.

The discourse needs to acknowledge that the advanced capabilities of drones make them strategically advantageous in certain environments. However, this advantage must be tempered by the responsibility to ensure that US drone programs are well-advised, well-planned, within the bounds of the law, and do not overreach strategic objectives.

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Building a New American Arsenal

The American Security Project (ASP) is a nonpartisan initiative to educate the American public about the changing nature of national security in the 21st century.

Gone are the days when a nation's strength could be measured by bombers and battleships. Security in this new era requires a New American Arsenal harnessing all of America's strengths: the force of our diplomacy; the might of our military; the vigor of our economy; and the power of our ideals.

We believe that America must lead other nations in the pursuit of our common goals and shared security. We must confront international challenges with all the tools at our disposal. We must address emerging problems before they become security crises. And to do this, we must forge a new bipartisan consensus at home.

ASP brings together prominent American leaders, current and former members of Congress, retired military officers, and former government officials. Staff direct research on a broad range of issues and engages and empowers the American public by taking its findings directly to them.

We live in a time when the threats to our security are as complex and diverse as terrorism, the spread of weapons of mass destruction, climate change, failed and failing states, disease, and pandemics. The same-old solutions and partisan bickering won't do. America needs an honest dialogue about security that is as robust as it is realistic.

ASP exists to promote that dialogue, to forge consensus, and to spur constructive action so that America meets the challenges to its security while seizing the opportunities the new century offers.

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