



NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

**DRONING ON: AMERICAN STRATEGIC MYOPIA
TOWARD UNMANNED AERIAL SYSTEMS**

by

Carlos S. Cabello

December 2013

Thesis Advisor:
Second Reader:

Bradley Jay Strawser
Robert O'Connell

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE December 2013	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE DRONING ON: AMERICAN STRATEGIC MYOPIA TOWARD UNMANNED AERIAL SYSTEMS			5. FUNDING NUMBERS	
6. AUTHOR(S) Carlos S. Cabello				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. government. IRB protocol number ____N/A____.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE A	
13. ABSTRACT (maximum 200 words) Throughout the past decade of wars, the U.S. has deployed unmanned aerial systems, commonly referred to as drones, from Africa to Asia collecting intelligence and targeting adversaries. The nation now stands at a crossroad seeking to develop future American drone policy against an evolving threat while at the same time shaping global norms. The past decade of American drone use focused on short-term benefits, intelligence collection and lethal targeting, rather than on the long-term consequences of technology diffusion, or ethical and legal frameworks. Myopic drone strategies threaten to establish a global precedent that could undermine the stability of international relations, as state and non-state actors (SANSAs) have begun to build, arm, and operate lethal unmanned systems at an alarming rate. Unmanned technology development and usage is outpacing international norms, regulations, and policies. These systems will usher in an era of unrestricted drone usage unless international regulations and standards are developed. This thesis examines whether American drone strategy is myopic and whether it is creating a dangerous international precedent. A qualitative analysis will identify the short-term benefits and long-term consequences of U.S. drone strategy, focusing on unmanned technology diffusion, ethical justifications, and legal frameworks. Examining American drone strategy can help explain why a myopic policy may be beneficial in the short-term, yet may increase threats to national interests in the long-term. The thesis concludes with an assessment of whether strategic myopia has already set a dangerous international precedent, which SANSAs will use to justify their future drone programs.				
14. SUBJECT TERMS Drones, remote, unmanned, myopia, diffusion, ethical, legal			15. NUMBER OF PAGES 87	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**DRONING ON: AMERICAN STRATEGIC MYOPIA TOWARD UNMANNED
AERIAL SYSTEMS**

Carlos S. Cabello
Chief Warrant Officer 4, United States Army
B.A., American Military University, 2010

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN DEFENSE ANALYSIS

From the

**NAVAL POSTGRADUATE SCHOOL
December 2013**

Author: Carlos S. Cabello

Approved by: Bradley Jay Strawser
Thesis Advisor

Robert O'Connell
Second Reader

John Arquilla
Chair, Department of Defense Analysis

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

Throughout the past decade of wars, the U.S. has deployed unmanned aerial systems, commonly referred to as drones, from Africa to Asia collecting intelligence and targeting adversaries. The nation now stands at a crossroad seeking to develop future American drone policy against an evolving threat while at the same time shaping global norms. The past decade of American drone use focused on short-term benefits, intelligence collection and lethal targeting, rather than on the long-term consequences of technology diffusion, or ethical and legal frameworks. Myopic drone strategies threaten to establish a global precedent that could undermine the stability of international relations, as state and non-state actors (SANSA) have begun to build, arm, and operate lethal unmanned systems at an alarming rate. Unmanned technology development and usage is outpacing international norms, regulations, and policies. These systems will usher in an era of unrestricted drone usage unless international regulations and standards are developed.

This thesis examines whether American drone strategy is myopic and whether it is creating a dangerous international precedent. A qualitative analysis will identify the short-term benefits and long-term consequences of U.S. drone strategy, focusing on unmanned technology diffusion, ethical justifications, and legal frameworks. Examining American drone strategy can help explain why a myopic policy may be beneficial in the short-term, yet may increase threats to national interests in the long-term. The thesis concludes with an assessment of whether strategic myopia has already set a dangerous international precedent, which SANSA will use to justify their future drone programs.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	BACKGROUND OF STUDY	1
B.	SIGNIFICANCE OF THE STUDY	7
C.	ASSUMPTIONS.....	11
D.	DEFINITION OF KEY TERMS.....	14
E.	ORGANIZATION OF RESEARCH	15
II.	DIFFUSION MYOPIA.....	19
A.	TECHNOLOGY OUTPACING REGULATION.....	19
B.	SHORT-TERM BENEFITS	22
1.	Money	22
2.	National Security.....	24
3.	Innovation.....	26
C.	LONG-TERM CONSEQUENCES	27
1.	Adversarial Acquisition.....	27
a.	State Actors.....	28
b.	Non-State Actors	29
2.	Lower Aggression Threshold	32
3.	Drone Counter-Measures.....	33
III.	ETHICAL AND LEGAL MYOPIA.....	39
A.	OPERATIONS OUTPACING POLICY	39
B.	SHORT-TERM BENEFITS	42
1.	Self-defense	42
2.	Lethal Operations	43
C.	LONG-TERM CONSEQUENCES	48
1.	Adversarial Justification	48
2.	Blow Back	50
IV.	RECOMMENDATIONS AND CONCLUSION.....	55
A.	RECOMMENDATIONS.....	55
B.	CONCLUSION	57
	LIST OF REFERENCES.....	59
	INITIAL DISTRIBUTION LIST	69

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF FIGURES

Figure 1.	American Expanded Drone Operations	6
Figure 2.	Countries Acquiring Drones Since December 2011	8
Figure 3.	Definition of Personality and Signature Strikes.....	44

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

Table 1.	Reporting of Pakistan Drone Strikes As of August 2013	4
Table 2.	Drone Myopia Matrix	9
Table 3.	MCTR/Wassenaar/Drone Programs	21
Table 4.	Civilian Death Rates in Comparative Campaigns	46

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

AQ	al-Qaeda
AQAP	al-Qaeda in the Arabian Peninsula
AQIM	al-Qaeda in the Islamic Maghreb
AUMF	authorization for use of military force
TBIJ	The Bureau of Investigative Journalism
DARPA	Defense Advanced Research Projects Agency
DoD	Department of Defense
DOJ	Department of Justice
DOS	Department of State
FATA	federally administered tribal area
HVT	high value target
IHRL	International Human Rights Law
ISR	intelligence, surveillance, reconnaissance
JWT	just war theory
LOAC	law of armed conflict
LWJ	<i>Long War Journal</i>
MEC	moral equality of combatants
MTCR	Missile Technology Control Regime
NAF	New American Foundation
OPTEMPO	operations tempo
PKK	Kurdistan Workers Party
SANSA	state and non-state actors
TCO	transnational criminal organization
RPV	remotely piloted vehicle
UAS	unmanned aerial system
UAV	unmanned aerial vehicle
UCAV	unmanned combat aerial vehicle
WASP	wireless aerial surveillance platform
WMD	weapons of mass destruction

THIS PAGE INTENTIONALLY LEFT BLANK

ACKNOWLEDGMENTS

Prior to conducting research for this thesis, the impact of American drone use did not trouble me. As a member of the military intelligence community, I have observed the many capabilities of unmanned technologies, from real-time intelligence collection to lethal targeting. It was not until discussing such topics with my advisors that my curiosity was piqued. I would like to express appreciation to my advisors, Professor Bradley Jay (BJ) Strawser and Professor Robert O'Connell. Their expertise and guidance was instrumental in allowing me to develop and write this thesis. I would like to offer additional thanks to Professor Jonathan Renshon for helping to frame my ideas into a coherent thesis. Without his class on strategic decision-making, I would have had a much harder time putting this all together.

Finally and most importantly, I have to thank my wife, Elizabeth. I greatly appreciate her patience, not only in dealing with my constant state of research over the past year, but for enduring my complaints of sore neck and rear end from the hours of sitting. As my editor, she had to listen to my ramblings about drone benefits and consequences while maintaining objectivity. Thank you for helping throughout this process. Without your love and support, this would not be possible.

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

A. BACKGROUND OF STUDY

The gruesome murder of 13 sailors by a notorious drug lord forced military officials to plan capture-or-kill operations in response to calls for revenge. The drug lord is a known smuggler, kidnapper, and pirate of commercial naval vessels. Unable to get accurate intelligence on the culprit's whereabouts, as he finds sanctuary in a neighboring country, officials choose to utilize their fleet of remotely piloted vehicles (RPV), commonly referred to as drones. The systems provide valuable targeting data near the murderer's safe house in a remote mountainous area. Due to the extreme risks of entering the area to make an arrest, the military decides that the best option is to conduct a lethal strike against the individual with an armed drone.

This sounds similar to decisions that American political and military officials have made countless times throughout the past decade of fighting against terrorists. However, the above-mentioned event occurred in October 2012, as Chinese military officials debated whether to use an armed drone to conduct a lethal strike into Myanmar to kill the drug lord.¹ The Chinese eventually decided against the use of a drone strike, opting to use local law enforcement to capture him. The incident highlights the capabilities of the Chinese unmanned program, plus a growing international threat as state and non-state actors (SANSA) seek to capitalize on unmanned technologies. Many of these SANSA are less discriminating in utilizing military force than the U.S.²

The United States' interest in unmanned vehicles dates back to 1917. Charles F. Kettering developed the Kettering aerial torpedo, nicknamed the "Bug."³ This system consisted of pre-set pneumatic and electrical controls that stabilized and guided it toward

¹ Jane Perlez, "Chinese Plan to Kill Drug Lord with Drone Highlights Military Advances," *New York Times*, February 21, 2013, <http://www.nytimes.com/2013/02/21/world/asia/chinese-plan-to-use-drone-highlights-military-advances.html>.

² Jim Michaels, "Experts: Drones Basis for New Global Arms Race," *USA Today*, January 9, 2013, <http://www.usatoday.com/story/news/world/2013/01/08/experts-drones-basis-for-new-global-arms-race/1819091/>.

³ National Museum of the U.S. Air Force, "Kettering Aerial Torpedo 'Bug,'" March 21, 2007, <http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=320>.

a target where it could detonate 180 pounds of explosives on contact. The Bug never flew in combat or developed further; however, the innovation paved the way for future American unmanned technology.

Innovations continued after World Wars I and II, and drones finally got a chance to fly combat operations during the Vietnam War. For example, the AQM-34 Ryan Firebee flew 34,000 operational surveillance missions over Southeast Asia between 1964 and 1975, with an estimated 83 percent of the aircraft returning to fly another day.⁴ The Firebee proved extremely reliable and highlighted the benefits of unmanned systems compared to manned aircraft, never losing a single pilot lost while collecting valuable intelligence. The research, development, and deployment of drones continued for the next several decades, primarily flying surveillance missions in Bosnia and Desert Storm.

The events of 9/11 and the subsequent Global War on Terror have made drones the American weapon of choice for eliminating terrorists and their safe-havens. The first lethal strike occurred over the skies of Yemen in 2002, when an American armed Predator fired its payload, killing the leader of al-Qaeda in Yemen (AQY) and an American citizen who was an al-Qaeda (AQ) operative.⁵ This strike ushered in a new era of American responses to terrorism and unmanned warfare. As operations tempo (OPTEMPO) increased against an expanding threat, so too did the demand for drones. American officials decided to increase its drone inventory to over 7,500 throughout the next several years.⁶ Simultaneously, numerous international organizations and nations raised ethical and legal questions with regard to the use of drones for lethal operations.

Following that first strike, American armed drones inflicted a number of lethal blows against terrorist networks. They eliminated key members of AQ and its affiliates, denying safe havens in Pakistan, Yemen, and Somalia at minimal financial cost, less risk to military forces, and fewer casualties than alternative methods. Strikes in those

⁴ NOVA, "AQM-34 Ryan Firebee," Public Broadcasting Service, accessed June 6, 2013, http://www.pbs.org/wgbh/nova/spiesfly/uavs_09.html.

⁵ Mary O'Connell, "International Law of Drones," *The American Society of International Law* 14, no. 38 (2010): 1.

⁶ Micah Zenko, "Reforming U.S. Drone Strike Policies," last modified January 2013, Council on Foreign Relations, <http://www.cfr.org/wars-and-warfare/reforming-us-drone-strike-policies/p29736>.

countries killed 4,700 militants, including 50 senior leaders of AQ and Taliban, accord.⁷ In addition to the leadership degradation, drones are eliminating lower level militants that possess special skills in bomb making, financing, and recruitment. The impact of the strikes created a sense of fear amongst the remaining AQ senior leaders, forcing the network to spread across the globe in search of new hiding areas. Documents discovered during the Abbottabad raid highlights Osama Bin Laden's fear as he issued guidance to his deputies about how to avoid drone strikes.⁸ Despite his advice, lethal strikes continued creating tension within the network.

In addition, lethal strikes also have an impact on civilian societies. Four databases consolidate the best publically available data on drone strikes: New American Foundation (NAF),⁹ The *Long War Journal* (LWJ),¹⁰ the University of Massachusetts (UMASS Drone),¹¹ and the Bureau of Investigative Journalism (TBIJ).¹² There are concerns to the accuracy of the open source reporting used in the databases; however, these statistics highlight the extensive use of drones and resulting civilian deaths.¹³ Averaging the four database totals for Pakistan alone, since 2004, the U.S. conducted 357 strikes resulting in 2,648 militants killed along with 241 civilians (see Table 1). Despite

⁷ Amanda Terkel, "Lindsey Graham: Drone Strikes Have Killed 4,700 People," *Huffington Post*, February 21, 2013, http://www.huffingtonpost.com/2013/02/21/lindsey-graham-drone-strikes_n_2734133.html.

⁸ Pam Benson, "Bin Laden Documents: Fear of Drones," *CNN Security Clearance* (blog), May 3, 2012, <http://security.blogs.cnn.com/2012/05/03/bin-laden-documents-fear-of-drones/>.

⁹ New America Foundation, *Pakistani Drone Analysis*, last modified July 31, 2013, accessed August 31, 2013, <http://natsec.newamerica.net/drones/pakistan/analysis>.

¹⁰ Bill Rogio and Alexander Mayer, "Charting the Data for US Airstrikes in Pakistan, 2004–2013," *Long War Journal*, last modified August 31, 2013, accessed September 3, 2013, <http://www.longwarjournal.org/pakistan-strikes.php>.

¹¹ University of Massachusetts Dartmouth Research Project, "UMASS Drone," last modified August 31, 2013, accessed September 2, 2013, <http://umassdrone.org/index>.

¹² Bureau of Investigative Journalism, *Covert Wars on Terror: The Data Sets*, last updated August 1, 2013, accessed September 3, 2013, <http://www.thebureauinvestigates.com/2013/01/03/obama-2013-pakistan-drone-strikes/>.

¹³ Avery Plaw, "Counting the Dead: The Proportionality of Predation in Pakistan," in *Killing by Remote Control: The Ethics of Unmanned Military*, ed. Bradley Jay Strawser (New York: Oxford University Press, 2013), 137.

uncertainties about the numbers, they do show that civilian casualties are low in relation to militants.¹⁴ Yet, these statistics continue to raise ethical and legal issues regarding utilization of drones to target terrorists.

Source	Total Strikes	Total Killed	Estimate of Civilian Deaths	Unknown	Civilian Deaths as Percentage of Total
PAKISTAN					
New America Foundation 2004-07	10	179	101	16	56.42%
2008	36	298	28	47	9.40%
2009	54	549	70	92	12.75%
2010	122	849	16	45	1.88%
2011	73	517	62	35	11.99%
2012	48	306	0	33	0.00%
2013	17	107	4	0	3.74%
Total 2004 - 2013	360	2805	281	268	13.74%
Bureau of Investigative Journalism 2004-07	11	151	108	--	71.52%
2008	38	252	59	--	23.41%
2009	54	473	100	--	21.14%
2010	128	874	84	--	9.61%
2011	75	447	52	--	11.63%
2012	48	229	4	--	1.75%
2013	18	79	0	--	0.00%
Total 2004-2013	372	2505	407	--	19.87%
<i>Long Wars Journal</i> 2004-07	10	215	20	--	9.30%
2008	35	286	31	--	10.84%
2009	53	463	43	--	9.29%
2010	117	801	14	--	1.75%
2011	64	405	30	--	7.41%
2012	46	300	4	--	1.33%
2013	19	88	11	--	12.50%
Total 2004 - 2013	344	2558	153	--	7.49%
UMASS Drone 2004-07	10	176	34	87	19.32%
2008	34	272	19	55	6.99%
2009	54	592	44	96	7.43%
2010	132	864	13	173	1.50%
2011	73	512	9	118	1.76%
2012	50	310	3	24	0.97%
Total 2004-2012	353	2726	122	553	6.33%
Total Average of 4 databases	357.25	2648.5	240.75		9.09%

Table 1. Reporting of Pakistan Drone Strikes As of August 2013¹⁵

¹⁴ Ibid., 152.

¹⁵ Ibid., 138–139.

Despite the successes of lethal drone operations, remnants of AQ core leadership continue to enjoy sanctuary in the Pakistani Federally Administered Tribal Area (FATA). Al-Qaeda in the Arabian Peninsula (AQAP) continues to expand control in Yemen, while planning attacks against the U.S. homeland and radicalizing individuals across the globe. Regional AQ affiliates, Somali al-Shabaab, Malian al-Qaeda in the Islamic Maghreb (AQIM), and Nigerian Boko Haram, continue to expand dark networks throughout global ungoverned territories. Senator John McCain argues that AQ is not on the run but expanding all over the Middle East, from Mali to Yemen and all places in between.¹⁶ The evolution of AQ's global network still poses a threat to American national interests. U.S. decision makers seek development of national drone policy to provide a standard for future administrations.

As wars end and budgets are constrained, the U.S. searches for alternative missions to utilize its expansive unmanned fleet's capabilities. The new aim is to provide partner nations the use of drone technology to combat threats that may have a national or regional destabilizing effect.¹⁷ New drone bases are allowing operations to shift amongst other hot spots around the world (see Figure 1). The U.S. is creating new hubs built in Seychelles, Nigeria, Ethiopia, and Turkey to participate in intelligence sharing operations with partner nations.¹⁸ These operations will focus on intelligence collection rather than lethal operations, limiting direct U.S. involvement but strengthening global partners.

¹⁶ White House, "Remarks by the President at the National Defense University," news release, May 23, 2013, <http://www.whitehouse.gov/the-press-office/2013/05/23/remarks-president-national-defense-university>.

¹⁷ Eric Schmitt, "Drones in Niger Reflect New U.S. Tack on Terrorism," *New York Times*, July 10, 2013, http://www.nytimes.com/2013/07/11/world/africa/drones-in-niger-reflect-new-us-approach-in-terror-fight.html?pagewanted=all&_r=0.

¹⁸ Craig Whitlock, "U.S. Shifts Drones to New Frontiers," *Washington Post*, July 21, 2013, http://www.washingtonpost.com/world/national-security/us-military-drone-surveillance-is-expanding-to-hot-spots-beyond-declared-combat-zones/2013/07/20/0a57fbda-ef1c-11e2-8163-2c7021381a75_story.html?hpid=z1.

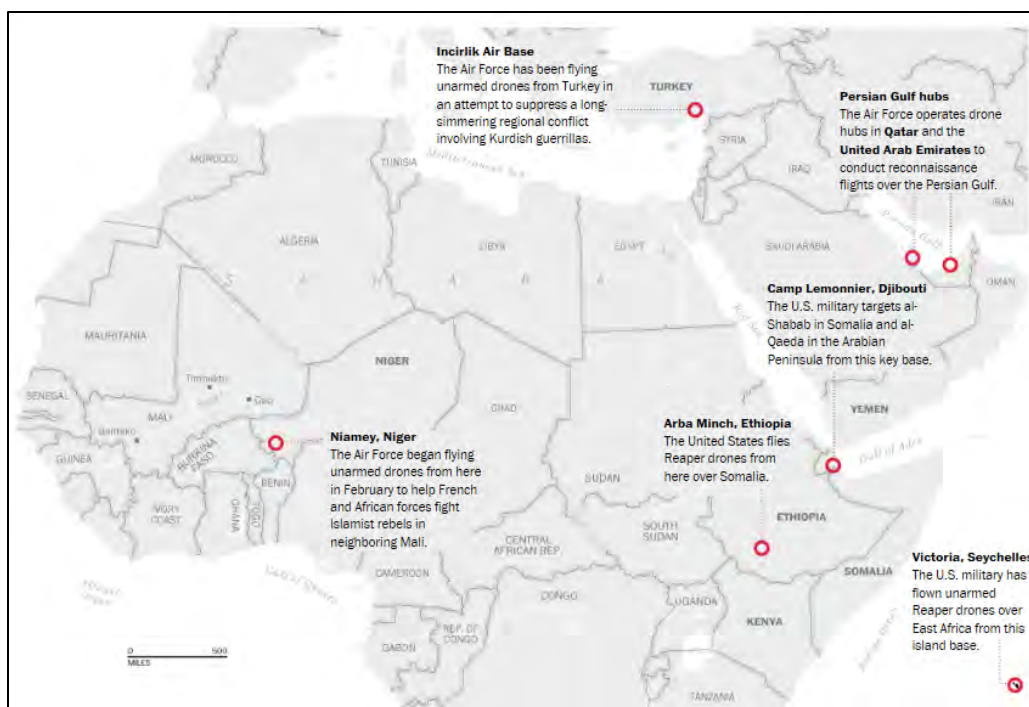


Figure 1. American Expanded Drone Operations¹⁹

An example of this next phase of American drone usage is Operation Nomad Shadow. This once-classified U.S. military operation helped Turkish military target Kurdistan Workers Party (PKK) fighters that cross the Iraqi-Turkish border.²⁰ High-resolution imagery beamed back to Turkish armed forces helped them pursue the rebels, as they slipped back and forth across the mountainous border with Iraq. Similarly, in January 2013, American drones enabled French forces to fight against AQIM as the group seized town and villages in northern Mali.²¹ The use of American unmanned technology allowed French and Nigerian forces to recapture lost territory and force the AQIM fighters to seek refuge. These operations may continue to expand as American policy-makers hope to aid allies while continuing to apply pressure against global dark networks.

¹⁹ Whitlock, "U.S. Shifts Drones to New Frontiers," 2013

²⁰ Ibid.

²¹ Eric Schmitt and Scott Savare, "U.S. Opens Drone Base in Niger, Building Africa Presence," *New York Times*, February 23, 2013, http://www.nytimes.com/2013/02/23/world/africa/in-niger-us-troops-set-up-drone-base.html?pagewanted=all&_r=0.

Drones are here to stay. Despite President Obama's recent foreign policy speech in May 2013 calling for an American reduction of usage, they remain Washington's weapon of choice.²² Especially for SANSAs that seek to limit the growing threats to national interests, as evident by Chinese consideration whether to conduct a lethal cross-border strike into Myanmar. This will inevitably result in additional international incidents, which risk dragging nations into conflicts that they would otherwise avoid if not for drones. The U.S. must develop a transparent national policy that will help frame international guidelines for the ethical and legal use of drones.

B. SIGNIFICANCE OF THE STUDY

Unmanned technology is proliferating at an alarming rate as the unmanned market lacks regulation and accountability. Analysts predict that drone demand will quadruple over the next decade, largely due to successful U.S. unmanned operations in the Iraq and Afghanistan wars.²³ Drones provide SANSAs with the ability to conduct intelligence operations cheaply, while maintaining the safety of their fighting forces. There are currently 76 nations, an increase of 45 over the past decade, that seek to develop indigenous unmanned programs used primarily for surveillance but capable of lethal operations as well (see Figure 2).²⁴ The Teal Group predicts that worldwide drone markets will more than double over the next decade from current expenditures of \$5.2 billion annually to \$11.6 billion.²⁵ The market continues to grow as the demand for these systems increase.

²² Daniel Byman, "Why Drones Work: The Case for Washington's Weapon of Choice," *Foreign Affairs*, July–August 2013, <http://www.foreignaffairs.com/articles/139453/daniel-byman/why-drones-work?cid=oth-cfr-callout-ja13-061813>.

²³ Tia Goldenberg, "Israel Leads Global Drone Exports as Demand Grows," *The Times of Israel*, July 21, 2013, <http://www.timesofisrael.com/israel-leads-global-drone-exports-as-demand-grows/>.

²⁴ Thomas Melito, *Nonproliferation: Agencies Could Improve Information and End-Use Monitoring on Unmanned Aerial Vehicle Exports* (GAO-12-536), 2012, <http://www.gao.gov/products/GAO-12-536>.

²⁵ John Meyer, "How Israel Became the Worldwide Leader in Drones," *The Atlantic Wire*, July 10, 2013, <http://www.theatlanticwire.com/global/2013/07/how-israel-became-worldwide-leader-drones/67050/>.

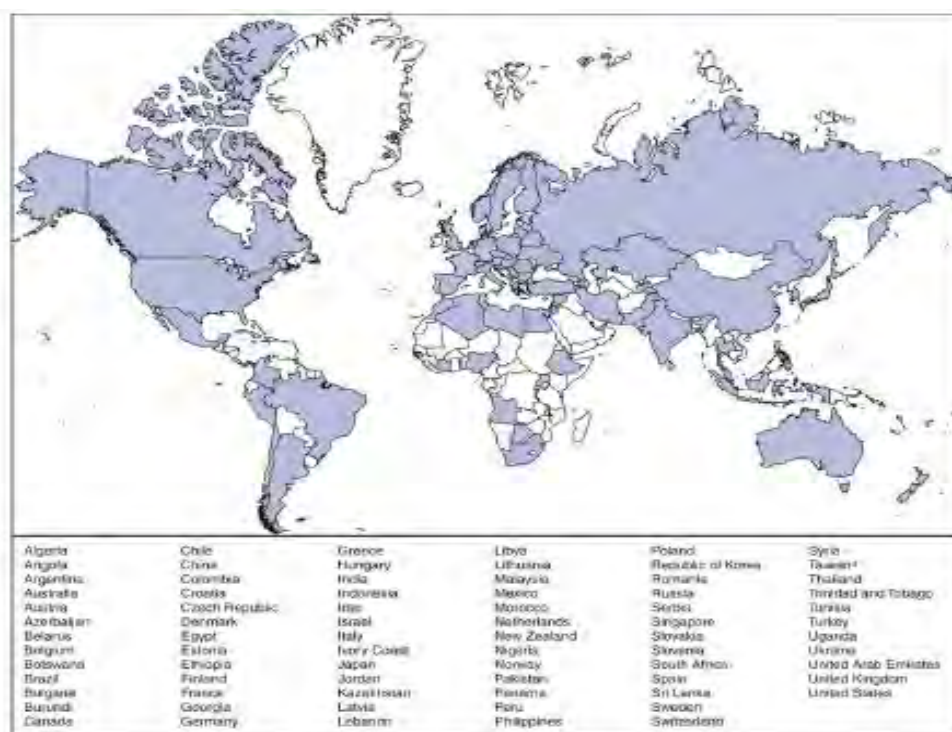


Figure 2. Countries Acquiring Drones Since December 2011²⁶

As the United States military withdraws from Afghanistan, the nation stands at a crossroad seeking to develop national drone policy against an evolving threat. The recently signed “Presidential Policy Guidance” promulgates a code drone use for future administrations.²⁷ However, the administration has yet to codify national drone policy, which is having an impact on how SANSAs develop and deploy future unmanned systems. It may already be too late to influence SANSAs programs.

A decade of American drone strategy has framed international perceptions for using such systems. Peter Singer, a Brookings Institute drone expert, has argued the Obama administration has been plagued with making short-term calculations on security issues with long-term impacts.²⁸ If American drone myopia exists, it may foster

²⁶ U.S. Government Accountability Office, *Nonproliferation*, 10.

²⁷ White House, “Remarks by the President,” 2013.

²⁸ Peter Singer, “Finally, Obama Breaks His Silence on Drones,” Brookings Institute, May 23, 2013, <http://www.brookings.edu/research/opinions/2013/05/23-drones-obama-singer>.

international norms that will lower the threshold for SANSA to engage in hostile actions with little fear of reprisal. Despite recent efforts, U.S. policy makers continue to wrestle with the long-term consequences of drone usage.

Drones threaten the future stability of international relations by providing allies and adversaries the capability to violate sovereign national boundaries to conduct surveillance or lethal operations with little risk, politically or militarily. The complex and controversial use of these systems, for lethal targeting and surveillance, is creating distinct problems for the United States as the administration remains myopically focused in regards to its drone strategy (see Table 2). Unless properly governed and regulated internationally, SANSA may utilize drones with little ethical restraint or legal oversight. The U.S. short-term focus on counter-terrorist (CT) operations and simultaneous ignoring of long-term consequences is creating three larger issues that threaten America's national interests.

	Myopia	Short-term Benefit	Long-Term Consequences
DIFFUSION	Exports	Money	Adversarial Acquisition
	Capacity Building	National Security	Lower Aggression Threshold
	R & D	Innovation	Counter-Measures
ETHICAL/LEGAL	Just War Theory	Self-defense	Adversarial Justification
	AUMF	Lethal Operations	Blowback

Table 2. Drone Myopia Matrix

First, the threat posed from global *diffusion* of unmanned technology is increasing, as the technology has outpaced regulations. The U.S. faces the threat of adversaries using a twenty-first century technology with twentieth-century rules.²⁹ Exporting unmanned technologies provides short-term monetary incentives, interoperability with partner nations, and continues technology research and development. However, diffusion is creating long-term consequences as adversaries acquire the technology available by capitalizing on a “free ride” of available technology.

²⁹ Peter Singer, *Wired for War: The Robotics Revolution and Conflict in the Twenty-First Century* (New York: The Penguin Press, 2009), 382.

This not only helps adversaries produce their own systems, but also allows them to create dangerous drone counter-measures. The lack of regulation allows the free flow of information and lethal technology to SANSAs threatening national interests.

Second, the U.S. cannot continue operating drones without backlash from domestic and international communities based on myopic *ethical justifications*. The U.S. justifies using drones based on traditional just war theory (JWT) reasoning, maintaining the right to self-defense against terrorist that pose harm to the nation.³⁰ The U.S. maintains its ethical justification for drone use based on the global terrorist threat, which may be plausible in the short-term, but it fails to consider the long-term ethical impact on civilian societies and a lowering of the threshold for aggression, by SANSAs. Drones are not simply changing how the U.S. fights but who fights, transforming the very nature of war with significant long-term ethical implications.³¹ Drones provide a valuable capability to fight against adversaries, but failure to guide international ethical norms for these weapons threaten national interests worldwide.

Third, the U.S. recently began publicly acknowledging the need for long-term *legal* standing for drones, but the lack of clarity and failure to institute an American legal framework sets a dangerous precedent for the global community. Attorney General Eric H. Holder Jr. has stated that there are multiple “checks” inside the executive branch to make sure drone use is legally justified.³² However, the lack of transparent legal justification creates an international environment in which SANSAs can justify their drone programs without legal rights and violate international human rights laws (IHRL). The administration maintains its legal justification on the inherent right to self-defense, detailed in a U.S. Department of Justice (DOJ) memo, based on perceived “imminence”

³⁰ Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations* (New York: Basic Books, 2006), 59.

³¹ Singer, *Wired for War*, 194.

³² Scott Shane, “Judge Challenges White House Claims on Authority of Drone Killings,” *New York Times*, July 19, 2013, <http://www.nytimes.com/2013/07/20/us/politics/judge-challenges-white-house-claims-on-authority-in-drone-killings.html?src=recg>.

of the threat.³³ The subjective nature of terms used in the memo, such as “imminent,” “activities,” and “recently,” creates legal issues toward the use of drones. The lack of a clear public policy creates perceived legal standings for other SANSA to use drones, threatening the international environment.

Strategic myopia may set a dangerous precedent for international drone use that will threaten American national interests and global peace efforts. The U.S. seeks to eliminate threats to the homeland; however are they ignoring possible long-term consequences of other nations using the technology in similar ways. “People say what’s going to happen when the Chinese and the Russians get this technology? The president is well aware of those concerns and wants to set the standard for the international community on these tools,” said Tommy Vietor, a White House spokesperson.³⁴ However, U.S. decision-makers failure to implement such a national drone policy may have a lasting effect as they miss an opportunity to frame international norms.

C. ASSUMPTIONS

The primary assumption of this research is that the U.S. will continue to utilize drones around the globe. The American distaste for sustained casualties and shrinking military budgets will influence the continuation of American drone use. Land wars in Afghanistan and Iraq have been lengthy and costly, with 4,485 American troops killed in Iraq and more than 2,147 killed in the still-unfinished Afghanistan war.³⁵ Although these numbers remain low compared to most war standards, the American public grows weary of soldier deaths and the high financial impacts. Sequestration is having an impact on military budgets, but the global demand and a growing market will increase drone spending. The fiscal year 2001 investment in drones was approximately \$667 million, and for FY2012, U.S. Department of Defense (DoD) has asked for \$3.9 billion in

³³ Michael Isikoff, “Justice Department Memo: It’s Legal to Use Drone Strikes against Americans,” *MSNBC*, February 4, 2013, <http://tv.msnbc.com/2013/02/04/exclusive-justice-department-memo-reveals-legal-case-for-drone-strikes-on-americans/>.

³⁴ Tabassum Zakaria, “As Drone Monopoly Frays, Obama Seeks Global Rule,” *Reuters*, March 17, 2013, <http://www.reuters.com/article/2013/03/17/us-usa-security-drones-idUSBRE92G02720130317>.

³⁵ Alan W. Dowd, “Drone Wars: Risk and Warnings,” *Parameters, US Army War College Quarterly* 42, no. 1 (winter–spring 2013), <http://www.carlisle.army.mil/usawc/Parameters/>.

procurement and development funding with much more planned for the future.³⁶ Drones allow the U.S. to continue to fight against terrorism on a budget while protecting its service members.

The second assumption is that the American drone industry's desire to tap into global demand and export markets will further diffuse technology. Two principal multilateral agreements that address exports of drones are the Missile Technology Control Regime (MTCR) and Wassenaar.³⁷ The U.S. is a signatory to both; but SANSAs that are non-signatories are free to export unmanned technology and knowledge without restrictions. American drone industry leaders want the removal of restrictions to allow the U.S. to capitalize on the growing market. Northrop Grumman CEO, Wes Bush is a vocal opponent of the agreements and states that controls "hurt" industry and the agreements "need an overhaul."³⁸ As military budgets shrink, drone industry corporations will pressure the U.S. to remove unmanned technology export restrictions.

A third assumption pertains to the proliferation threat related primarily to medium and long-range drones only. According to the Government Accountability Office (GAO) drone report, the majority of foreign drones acquired fall within the tactical category. Tactical systems conduct intelligence, surveillance, and reconnaissance (ISR) and typically have a limited operational range of 300 kilometers.³⁹ Tactical and micro UAV technology is readily available at electronic stores across the globe. Medium and long-range systems are of concern due to capabilities of longer flying distance and greater weapon payloads. The Missile Technology Control Regime (MTCR) divides drones into

³⁶ Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Program Acquisition Costs by Weapon System*, Washington, DC: Department of Defense, 2011, http://comptroller.defense.gov/defbudget/fy2012/FY2012_Weapons.pdf, 1-1.

³⁷ MTCR, established in 1987, is a voluntary association of 34 countries that share the goal of limiting the spread of ballistic and cruise missiles and UAVs capable of delivering weapons of mass destruction. Wassenaar, established in 1996, is a voluntary association of 41 countries that share the goal of limiting the spread of certain conventional weapons and sensitive dual-use items having both civilian and military applications.

³⁸ Chris Cole, "Industry Lobbying to Change Drone Export Control Rules," *Drone Wars UK*, November 11, 2011, <http://dronewars.net/2011/11/28/industry-lobbying-to-change-drone-export-control-rules/>.

³⁹ Missile Technology Control Regime, "Frequently Asked Questions," accessed August 13, 2013, <http://www.mtcr.info/english/FAQ-E.html>.

two separate categories, those capable of delivering 500 kilogram warhead further than 300 kilometers (Cat I) and those that carry a lighter warhead or have a range of less than 300 kilometers (Cat II).⁴⁰ These categories allow for a determination of drone capabilities to place restriction on transfer of technologies, specifically category I systems. However, all decisions of exports are on a national basis and there are no sanctions by other countries if MTCR is broken.⁴¹ This creates a system that has limited authority to control the diffusion of technology.

A fourth assumption involves the accuracy of available information regarding drone strikes, as there is lack of consensus on the number of civilian deaths. The four databases, mentioned earlier, differ significantly in relation to the number of civilians killed.⁴² The numbers of civilian deaths range from TBIJ's 407 to UMASS Drone at 122 (see Table 1). Limited access to post-strike locations creates controversies over the accuracy of civilian death numbers, as militants typically cordon off strike areas.⁴³ In addition, the descriptions of what constitutes a civilian create a larger difference in numbers; an example is the U.S. classification of any military aged male in the blast area as a combatant.⁴⁴ The data in these databases is constantly changing, as new strike information becomes available or additional analysis added. Despite the uncertainties, data from the four databases provide the widest range of sources and methodologies engaged to monitor drone strikes.⁴⁵

A fifth assumption concerns a familiarization with the traditional just war theory (JWT). The JWT is a set of "articulated norms, customs, professional codes, legal precepts, religious and philosophical principles, and reciprocal arrangements that shape

⁴⁰ Ibid.

⁴¹ Chris Cole, "Mapping Drone Proliferation: Big Business vs. MTCR," *Drone Wars UK*, September 18, 2012, <http://dronewars.net/2012/09/18/mapping-drone-proliferation-big-business-vs-the-mtr/>.

⁴² Plaw, "Counting the Dead," 136.

⁴³ Farhat Taj, "Drone Attacks," *Daily Times*, January 2, 2012, http://www.dailytimes.com.pk/default.asp?page=2010%5C01%5C02%5Cstory_2-1-2010_pg3_5.

⁴⁴ Conor Friedersdorf, "CNN's Bogus Drone-Deaths Graph," *The Atlantic*, July 6, 2012, <http://www.theatlantic.com/politics/archive/2012/07/cnns-bogus-drone-deaths-graphic/259493/>.

⁴⁵ Plaw, "Counting the Dead," 137.

judgment of military conduct.”⁴⁶ Michael Walzer argues that independent of the justice for going to war (*jus ad bellum*); all combatants have an equal right to kill one another within war (*jus in bello*).⁴⁷ This right stems from the inherent right to self-defense. However, recent just war revisionist theorist (McMahan and Strawser) argue against Walzer’s theory.⁴⁸ They argue that not all combatants possess equal right to kill one another, only those that fight for a just cause.⁴⁹ This sheds light on the drone debate, arguably justifying American use of drones for a just cause. This debate is out of the scope of this research, but highlights the need for transparency of American ethical justifications.

D. DEFINITION OF KEY TERMS

The term “myopia” refers to cognitive thinking and decision making that is narrow in scope, lacks foresight, lacks concern for wider interests or for long-term consequences. It describes a decision that may be beneficial in the present but detrimental in the future, or a viewpoint that fails to consider anything outside a very narrow and limited range.⁵⁰ In other words, it is doing things that make one better off sooner than later. Within international relations, strategic myopia describes a failure to recognize future external long-term consequences because shared short-term perspectives blind decision-makers.⁵¹ This cognitive bias has a negative effect on policy, which results in shortsighted policies, as this thesis argues is the present case with drones.

The term “diffusion” refers to the wide dissemination of social or intellectual capital from one culture to another. Four factors influence diffusion: innovation, communication channels, time, and a social system.⁵² Together these factors contribute

⁴⁶ Walzer, *Just and Unjust Wars*, 44.

⁴⁷ Ibid., 37.

⁴⁸ Jeff McMahan, “Foreword,” in *Killing by Remote Control: The Ethics of Unmanned Military*, ed. Bradley Jay Strawser (New York: Oxford University Press, 2013), ix–xv.

⁴⁹ Jeff McMahan, *Killing in War* (New York: Oxford University Press, 2011), 15.

⁵⁰ Karl DeRouen, Jr. and Alex Mintz, *Biases in Decision Making in Understanding Foreign Policy Decision Making* (Cambridge, UK: Cambridge University Press, 2010), 38–54.

⁵¹ Theodore Levitt, “Marketing Myopia,” *Harvard Business Review* 38, (July–August 1960): 57–56.

⁵² Everett M. Rogers, *Diffusion of Innovations* (New York: Free Press, 1995).

to the theory of diffusion of innovation, which seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Diffusion of unmanned technology represents a threat to the international community, as these systems provide unique capabilities. Diffusion can be of value to societies that can benefit from access to technology innovation, but rapid diffusion with little regulation can be detrimental to national interests.

Finally, description of these unmanned systems under examination varies. Among the names ascribed to them include, remotely piloted vehicles (RPV), unmanned aerial vehicles (UAV), unmanned combat aerial vehicle (UCAV), unmanned aerial systems (UAS), or more commonly called drones. The DoD defines UAVs as powered, aerial vehicles that do not carry human operators, use aerodynamic forces to provide vehicle lift, fly autonomously or are piloted remotely, and can carry a lethal or nonlethal payload.⁵³ The term UAS describes all the components that are vital to unmanned operations. They are comprised of an unmanned aircraft (UA), payload, human operator, control element, display, communication architecture, life cycle logistics, and supported soldier.⁵⁴ Note that UAS require more knowledge, training, and expertise to operate than the drones sold through Amazon or RadioShack. While the terms may vary, for readability the use of the term drones follows throughout this thesis.

E. ORGANIZATION OF RESEARCH

This thesis provides a qualitative analysis to determine if, indeed, American drone strategy is myopic, and if so, to what extent is it creating a potentially dangerous international precedent threatening American national interests. This is not an attempt to address the moral and legal debates about the proper use of drones, but to investigate the impact of American policy on future SANSAs usage. The drone “arms race” is here, as state and non-state actors build, arm, and fly lethal unmanned systems. The use of drones

⁵³ U.S. Department of Defense, *DoD Dictionary of Military and Associated Terms* (Joint Publication 1-02) (Washington DC: U.S. Department of Defense, 2007), 563.

⁵⁴ U.S. Army Drone Center of Excellence, “The Eyes of the Army, Unmanned Aircraft Systems Roadmap 2010–2035,” Federation of American Scientists, accessed May 20, 2013, <http://www.fas.org/irp/program/collect/drone-army.pdf>.

poses a risk of becoming an unregulated and unaccountable system to deploy immediate lethal force with murky ethical and legal justifications. The U.S. cannot afford to continue drone operations while wishing away dangerous long-term consequences. The U.S. must strengthen the MTCR to ensure strict monitoring of drone technology exports to limit SANSAs access and develop an international legal framework to enforce ethical use of the systems.

Chapter II examines whether the existence of American *diffusion* myopia is creating a dangerous international precedent. Technology is quickly outpacing regulation, creating an international environment where SANSAs desire a quick and cheap means to maintain security. The first section discusses the short-term benefits gained through the continued use of drones without a clear national policy and industry's desire for a share of the growing market. These issues are at the heart of the precedent being set for SANSAs to justify their use. The second section discusses the long-term consequences from the diffusion of drone technology and the impacts on future international relations.

Chapter III examines whether the existence of American drone *ethical and legal* myopia is creating a dangerous international precedence. Drone operations are quickly outpacing policy. Determining short-term benefits and long-term consequences provides an understanding to what extent, if any, American myopia exists. The lack of clear legal and ethical justification may foster precedence for global unmanned programs to operate in violation of the JWT and law of armed conflict (LOAC), creating a dangerous international environment. Additionally, as civilian deaths will grow, American strategies are creating animosity amongst civilian populations, shaping global perceptions that threaten national interests abroad. The U.S. administration continues to rely on drones yet fails to produce national policy that will aid in framing international guidelines. This may create a dangerous precedent for SANSAs to use drone against adversaries without international legal penalty.

Finally, Chapter IV concludes with an assessment of whether U.S. drone strategy is myopic and provides recommendations to reduce the threat thereby posed to the international community. Without the proper regulation and governance of drone

technology, SANSA will follow American precedent and use these systems, threatening national interests. Now is the time for U.S. administration to codify its drone strategy to frame international guidelines.

THIS PAGE INTENTIONALLY LEFT BLANK

II. DIFFUSION MYOPIA

This is a robotics revolution, but it's not just an American revolution—everyone's involved, from Hezbollah to paparazzi.

Peter Singer, Brookings Institute drone expert.⁵⁵

A. TECHNOLOGY OUTPACING REGULATION

As countries of concern and terrorist organizations acquire unmanned technology, the U.S. faces increasing threat from diffusion myopia. The U.S. government believes that SANSAs pose little risk because of the technical expertise required to integrate unmanned technology successfully are too great.⁵⁶ However, common amongst weapon innovations is how quickly actors adopt the technology and modify it for their own purposes. The U.S. must count on every other actor as having drones in the future and cannot assume that America will always have a technology advantage.⁵⁷ Furthermore, what makes drones different, and even more dangerous, is not only the effectiveness of the weapon, but the lack of internationally accepted regulations that govern research and development (R&D), systems use, and exports of the technology. Global diffusion of unmanned technology is quickly outpacing regulations.

One issue influencing diffusion myopia is the lack of a cohesive drone *export* policy. There are currently 50 countries producing over 900 different drones, as they seek to compete *economically* and militarily in the emerging field.⁵⁸ The demand for these systems allow drone corporations to flood the global market, without strict export regulations, other than the non-binding MTCR and Wassenaar agreements. Several countries of concern, China, Syria, Lebanon, and Iran, are non-signatories to the international agreements yet seek to *acquire* the technology and develop drone programs (see Table 3). American allies (e.g., Israel, one of the largest exporters of unmanned

⁵⁵ David Wood, “American Drones Ignite New Arms Race from Gaza to Iran to China,” *Huffington Post*, November 27, 2012, http://www.huffingtonpost.com/2012/11/27/american-drones_n_2199193.html.

⁵⁶ U.S. Government Accountability Office, *Nonproliferation*, 19.

⁵⁷ Singer, *Wired for War*, 268.

⁵⁸ U.S. Government Accountability Office, *Nonproliferation*, 13.

technology) continue to diffuse unmanned technology while not being a member of either agreement also.⁵⁹ Whether adversary or ally, these countries raise concerns about nonmembers' potential to undermine the MTCR's ability to limit exports and diffusion.

⁵⁹ Ibid., 11.

Country	MCTR	Wassenaar	UAS Program	Country	MCTR	Wassenaar	UAS Program
Algeria			X	Libya			X
Angola			X	Lithuania		X	X
Argentina	X	X	X	Luxembourg	X	X	
Australia	X	X	X	Malaysia			X
Austria	X	X	X	Malta		X	
Azerbaijan			X	Mexico		X	X
Belarus			X	Morocco			X
Belgium	X	X	X	Netherlands	X	X	X
Botswana			X	New Zealand	X	X	X
Brazil	X		X	Nigeria			X
Bulgaria	X	X	X	Norway	X	X	X
Burundi			X	Pakistan			X
Canada	X	X	X	Panama			X
Chile			X	Peru			X
China			X	Philippines			X
Colombia			X	Poland	X	X	X
Croatia	X		X	Portugal	X	X	
Czech Republic	X	X	X	Republic of Korea	X	X	X
Denmark	X	X	X	Romania		X	X
Egypt			X	Russia	X	X	X
Estonia		X	X	Serbia			X
Ethiopia			X	Singapore			X
Finland	X	X	X	Slovakia	X		X
France	X	X	X	Slovenia	X		X
Georgia			X	South Africa	X	X	X
Germany	X	X	X	Spain	X	X	X
Greece	X	X	X	Sri Lanka			X
Hungary	X	X	X	Sweden	X	X	X
Iceland	X			Switzerland	X	X	X
India			X	Syria			X
Indonesia			X	Taiwan			X
Iran			X	Thailand			X
Ireland	X	X		Trinidad and Tobago			X
Israel			X	Tunisia			X
Italy	X	X	X	Turkey	X	X	X
Ivory Coast			X	Uganda			X
Japan	X	X	X	Ukraine	X	X	X
Jordan			X	UAE			X
Kazakhstan			X	United Kingdom	X	X	X
Latvia		X	X	United States	X	X	X
Lebanon			X				

Table 3. MCTR/Wassenaar/Drone Programs⁶⁰

⁶⁰ Ibid., 45–46.

A second issue that may influence diffusion myopia is efforts to *build partner-nation capacity* to fight global threats. Despite the highlighted threat posed from technology diffusion, the U.S. government remains committed to transferring unmanned technology to its allies. This contradicts the core of current arms control measures, increasing the threat to national security.⁶¹ Once nations acquire drones, they are free to utilize the systems as they desire with no international norms or regulations in place to govern use; this *lowers the threshold* for the use of force.

A third issue that may foster diffusion myopia is the desire for continued *research and development* of unmanned technology. American R&D leads to *innovation* of smaller, faster, and quieter systems that expand future roles of the systems. As highlighted earlier, the U.S. military and commercial industries export technology to garner capital for R&D. However, this creates a “free-ride” for other SANSAs that acquire knowledge to develop similar systems.⁶² An example is with the current development of micro drones, tiny weapons designed to attack in swarms, and stealth technology. Both the U.S. and China are working to incorporate these technologies into a single system that will provide unique military capabilities.⁶³ Not only do SANSAs gain the capabilities they seek through diffusion, but they also gain insight into how to defeat unmanned technology through development of *counter-measures*.

The following is an examination of the short-term benefits and the long-term consequences of the issues listed above to determine if American strategy is myopic and the nature of the threat posed to national interests.

B. SHORT-TERM BENEFITS

1. Money

Exports of unmanned technologies provide short-term monetary incentives in an expanding global market. Between 2005 and 2010, the U.S. approved over \$388 million

⁶¹ Cole, “Mapping Drone Proliferation,” 2012.

⁶² Singer, *Wired for War*, 239.

⁶³ Defense Science Board, *The Role of Autonomy in DoD Systems* (Washington DC: Office of Under Secretary of Defense for Acquisition, Technology and Logistics, 2012), 75.

dollars of drone exports with 1,278 approved licenses issued to U.S. Department of State (DOS) and 135 commercial corporations.⁶⁴ These numbers are likely to grow along with greater demand for the systems, as drone industry leaders seek to maintain a strong defense industrial base. The Aerospace Industries Association estimates the global drone market could be worth \$89 billion over the next decade.⁶⁵ An effective way for U.S. companies to stay competitive is to nurture its expertise in unmanned challenge areas (e.g., autonomous flight, control of multiple vehicles, command and control, communications bandwidth).⁶⁶ If the U.S. fails to stay competitive in the growing market, European, Russian, Israeli, or Chinese companies will take over.

Industry officials continue to lobby the Obama administration to lessen restrictions on exports. Estimates of American drone expenditures are to double from \$1.7 billion in 2011 to \$3.5 billion in 2020.⁶⁷ Industry pressures are having an impact on American policy. For example, government officials recently sponsored six proposals to amend the MTCR, five of which would have moved drones categorized as Category I to Category II, making them easier to export.⁶⁸ Government officials continue to look for ways to lessen drone export restrictions to allow industry to remain competitive in the growing market, while monitoring growing threat.

As military budgets shrink, the Pentagon is looking for ways to help struggling defense contractors. A new pilot program seeks to help companies building their weapons strictly for exporting them to other countries.⁶⁹ The DoD recently established guidelines enabling 66 countries eligible to buy U.S. drones; clearing the way for more

⁶⁴ U.S. Government Accounting Office, *Nonproliferation*, 27.

⁶⁵ Andrea Shala-Esa, "U.S. Industry Touts Drone Promise as Public Debate Flares," Reuters, May 21, 2013, <http://news.yahoo.com/u-industry-touts-drone-promise-public-debate-flares-020214387.html>.

⁶⁶ Jeremiah Gertler, *U.S. Unmanned Aerial Systems* (CRS RL42136) (Washington, DC: Congressional Research Service, 2012), 28.

⁶⁷ Teal Group Inc., "Unmanned Aerial Vehicles Market Overview," *World Missiles Briefing* (Fairfax, VA, Teal Group Inc., 2011).

⁶⁸ U.S. Government Accounting Office, *Nonproliferation*, 21.

⁶⁹ Marjorie Censer, "Pentagon Buying Official Forecasts Much Tougher 2014 for Defense Contractors," *Washington Post*, September 1, 2013, http://www.washingtonpost.com/business/capitalbusiness/pentagon-buying-official-forecasts-much-tougher-2014-for-defense-contractors/2013/08/30/a8ae5dce-0e6b-11e3-bdf6-e4fc677d94a1_story.html.

overseas sales.⁷⁰ Industry officials praise the administrations for moves to boost arms exports, but are frustrated at delays in codifying new export policy as they look to offset spending cuts spurred by U.S. military budgets cuts. Richard Genaille, Deputy Director of the Pentagon's Defense Security Cooperation Agency stated, "It hasn't moved quite as fast as we would like, but we're not giving up."⁷¹ U.S. defense exporters are at a disadvantage versus foreign competitors due to U.S. regulations governing exports of weapons and "dual-use" goods that have both civilian and military applications.⁷² Continued pressure and lobbying against these regulations will increase the number of licenses for exports, further diffusing unmanned technologies.

The monetary incentives and desire for drone industry to stay competitive in the market are fostering government officials to lessen the already loose agreements currently in place. Singer, the Brookings Institution drone expert stated, "This is a revolution in which billions and trillions of dollars will be made. To stop it you'd have to first stop science, and then business, and then war."⁷³ Obviously stopping science, business, and war are unlikely; however, controlling exports will help curtail threats to national interests.

2. National Security

Partner-nation *capacity building* amongst allies provides the short-term benefit of reducing threats to *national security*. American adversaries in Iraq and Afghanistan drove the demand for drones as they hid amongst the civilian populations, requiring constant surveillance and quick strike capabilities that could minimize collateral damage.⁷⁴ These same enemies are now moving beyond the battlefield and threaten civilian populations as they seek to wage jihad. As the war in Afghanistan ends,

⁷⁰ Doug Palmer, "Pentagon Lists 66 Countries as Eligible to Buy Drones," *Aviation Week*, August 27, 2013, http://www.aviationweek.com/Article.aspx?id=/article-xml/awx_09_06_2012_p0-492835.xml&p=1.

⁷¹ Palmer, "Pentagon Lists 66 Countries," 2013.

⁷² Ibid.

⁷³ David Wood, "American Drones Ignite New Arms Race from Gaza to Iran to China," *Huffington Post*, November 27, 2012, http://www.huffingtonpost.com/2012/11/27/american-drones_n_2199193.html.

⁷⁴ Gertler, *U.S. Unmanned Aerial Systems*, 1.

interoperability provides the United States and its global allies the ability to maintain pressure on global terrorist networks that threaten future security environment.

The U.S. government continues selected technology transfers to further national security objectives. This allows time for partner nations to strengthen their intelligence, law enforcement, and security apparatuses to catch up and overcome threats.⁷⁵ These nations take advantage of the time and resources that the U.S. provides to its drone programs and quickly develop their own tactics, techniques, and procedures. The transfer of these systems increase allies' capabilities and strengthen the industrial base for drone production.

The list of partner nations attempting to buy and develop their own programs is growing. For example, Germany wants to buy Predator drones from the U.S. to obtain long-range surveillance capabilities.⁷⁶ Neighboring Poland is looking at cancelling its manned fighter program for armed drones.⁷⁷ In addition, Canada is planning a total of one billion dollars for its future program.⁷⁸ Moreover, Australia military plans spending \$3 billion on drones if allowed by its government.⁷⁹ Also, Japan's Ministry of Defense recently requested \$3 billion yen to develop an indigenous drone program by 2019; however, the technology will ultimately come from the U.S.⁸⁰ Even the United Nations is joining the trend, signing a contract for drone surveillance support over the Congo, despite ongoing investigations into American legal and ethical use of armed drones.⁸¹

⁷⁵ Frank G. Hoffman and Evan Kalikow, "To Drone or Not to Drone," *Foreign Policy Research Institute*, August 2013, <http://www.fpri.org/articles/2013/08/drone-or-not-drone>.

⁷⁶ Drone Vision, "German Air Forces Wants Armed Drone," *The Editor*, September 3, 2012, <http://www.dronevision.com/2012/09/03/german-air-force-wants-armed-drone/>.

⁷⁷ Arie Egozi, "Will the Real UAV Revolution Begin in Poland," *Israeli Defense*, August 27, 2012, <http://www.israeldefense.com/?CategoryID=472&ArticleID=1605>.

⁷⁸ Peter McKenna, "Defense Headquarters Sets Its Sights on Billion-Dollar Fleet of Armed Drones," *The Herald*, September 2, 2012, <http://thechronicleherald.ca/thenovascotian/132190-defence-headquarters-sets-its-sights-on-billion-dollar-fleet-of-armed-drones>.

⁷⁹ Mark Corcoran, "Australia Moves to Buy \$3b Spy Drones," *ABC News*, September 4, 2012, <http://www.abc.net.au/news/2012-09-04/australia-moves-to-buy-spy-drones/4236544>.

⁸⁰ Matthew M. Burke, "Pacific Allies Turn to Drone Development," *Stars and Stripes*, November 23, 2012, <http://214.14.134.30/ebird2/ebfiles/e20121124911199.html>.

⁸¹ *CBC News*, "UN Embraces Drone Technology over Congo," Reuters, July 14, 2013, <http://www.cbc.ca/news/world/story/2013/07/14/wd-un-drones-congo.html>.

These programs will provide the capabilities for partner nations and organizations to reduce global threats, protecting American national interests.

Capacity building for our partner nations provides short-term security against threats to national interests. The more partner nations that acquire drones the more pressure the international community can apply against global threats. These systems provide allies greater ability to gain insight into ungoverned spaces and limit terrorist safe havens.

3. Innovation

The diffusion of drone technology creates global *research and development* (R&D), providing the short-term benefit of *innovation* of unmanned technology. Exports of drones is allowing new experts to conduct R&D, increasing innovation required to maintain a share of the growing drone market.⁸² Revenues from exports are critical as it accounts for the majority of innovation capital.⁸³ The development and use of unmanned technologies for other than lethal operations is only just beginning. A search of the headlines reveals drones used to monitor insect breeding areas in Florida, drones used to identify wildfire hotspots to aid fire fighters, and game wardens tracking animal migration patterns. Innovation allows for the creation of new systems that can satisfy the future demands of unmanned technologies.

The military is conducting extensive R&D to innovate its systems for future combat uses. The Defense Advanced Research Projects Agency (DARPA) recently announced a contest to see who can design a UAV that can fit in a backpack and costs less than \$10,000 dollars.⁸⁴ This project will likely create innovation that will have far-reaching benefits for the military. DoD R&D funding continues to grow as the systems are relatively inexpensive and miniaturization of technology is helping accelerate new systems.⁸⁵ In addition to the smaller and lighter systems, the U.S. Army is projecting

⁸² U.S. Government Accountability Office, *Nonproliferation*, 20.

⁸³ Ibid., 17.

⁸⁴ Palmer, "Pentagon Lists 66 Countries," 2013.

⁸⁵ Gertler, *U.S. Unmanned Aerial Systems*, 2.

requirements for fully autonomous hypersonic systems by 2034.⁸⁶ These systems will provide the long duration and deep penetration capabilities required for global force projection. The advancement of this technology requires innovation from within the military and in conjunction with its civilian counterparts.

Diffusion of unmanned technology is creating other venues for R&D and innovation. The internet provides how-to guides for innovating new systems. Members of online forums have been doing this for years on websites like DIYDrones.com. The site, led by *Wired* magazine's editor-in-chief, Chris Anderson, has 15,000 members exploring the boundaries of what is possible with do-it-yourself drone technology.⁸⁷ These types of collaboration sites will have an impact on the innovation of new systems across the globe. Adversarial nation states are also aiding in the innovation of unmanned systems. Similar to DARPA's contest, Iran is looking to do the same with the Div-e-Sepid contest, where competitors from 65 teams race their homemade drones around Mount Damavand.⁸⁸

These competitions and DIY efforts provide short-term innovation of unmanned technologies. This allows the drone industry to remain competitive in the global market while developing beneficial systems for other than combat operations. Expanded expertise and funding for R&D is innovating unmanned systems for future use across the globe.

C. LONG-TERM CONSEQUENCES

1. Adversarial Acquisition

Exports of drones create long-term consequences as American *adversaries acquire* and develop indigenous systems. These exports are placing American forward deployed troops at risk from covert collection of base security procedures and postures, as government officials have yet to codify use of the systems. The acquisition of these systems without international norms and regulations in place allows SANSAs to conduct

⁸⁶ U.S. Army UAS CoE, "The Eyes of the Army," 59–65.

⁸⁷ Palmer, "Pentagon Lists 66 Countries," 2013.

⁸⁸ *Ibid.*

lethal operations following the American example. “The problem is that we’re creating an international norm, asserting the right to strike preemptively against those we suspect of planning attacks,” argues Dennis M. Gormley, a senior research fellow at the University of Pittsburgh.⁸⁹ This raises serious concerns as the administration has yet to develop a national policy that can help frame international guidelines.

a. State Actors

Government and military officials are voicing concerns about the threat posed by adversarial states’ acquisition of drones. A recent Pentagon study highlights the “very serious threat” posed by enemy armed drones, which could target aircraft carriers, conduct cross-border operations creating chaos and confusion through swarming airspaces, and even close forward military bases that are in range of lethal drones.⁹⁰ China’s recent desire to use an armed drone to conduct lethal operations into Myanmar highlights this growing threat. Pentagon officials worry about nation states that are engaging in efforts to develop and field advanced drones.

China is quickly becoming a leader in the development and export of unmanned systems. The sophistication of its program could challenge U.S. military dominance in the Asia-Pacific Theater and threaten neighbors over territorial disputes.⁹¹ “China is following the precedent set by the U.S. The thinking is that, if the U.S. can do it, so can we,” said Siemon Wezeman, a senior fellow at the arms transfers program at the Stockholm International Peace Research Institute in Sweden.⁹² It is only a matter of time before China and other SANSA are able to arm its drones, rationalizing its program based on the American example.

⁸⁹ Scott Shane, “Coming Soon: The Drone Arms Race,” *The New York Times*, October 8, 2011, http://www.nytimes.com/2011/10/09/sunday-review/coming-soon-the-drone-arms-race.html?pagewanted=all&_r=0.

⁹⁰ Defense Science Board, *The Role of Autonomy in DoD Systems*, 72.

⁹¹ Ian M. Easton and L. C. Russell Hsiao, “The Chinese People’s Liberation Army’s Unmanned Aerial Vehicle Project: Organizational Capacities and Operational Capabilities,” Project 2049 Institute, March 11, 2013, http://project2049.net/documents/uav_easton_hsiao.pdf.

⁹² Christopher Bodeen, “China Emerging as New Force in Drone Warfare,” *Santa Cruz Sentinel*, May 3, 2013, http://www.santacruzsentinel.com/ci_23163525/china-emerging-new-force-drone-warfare?IADID=Search-www.santacruzsentinel.com-www.santacruzsentinel.com.

Iran is another nation that is developing an extensive drone program that threatens regional security. In May 2013, Iranian officials unveiled their new stealth drone, dubbed the Epic, which is capable of armed long-range operations.⁹³ The Epic provides Iran with the ability to conduct covert surveillance missions against adversaries, capitalizing from U.S. tactics over the previous decade. Iranian officials claim to have already conducted dozen of reconnaissance flights over Israel since 2006.⁹⁴ Similar to China, Iran is exporting its unmanned technology and knowledge to its allies in an effort to bolster military ties and strength defenses, yet threatening international relations. Syria and Venezuela are examples of countries that are reportedly equipped with Iranian drones.⁹⁵ The proliferation and use of these systems remain unregulated and pose a threat to neighboring countries and their regions.

North Korea (NK) claims to have lethal drones within its arsenal. During a recent parade and military drill, it displayed several MQM Streakers, a 70s-era U.S. target drone it acquired from Syria.⁹⁶ It is unconfirmed if the drones are currently capable of conducting lethal operations, but it is only a matter of time before NK can refit these older style drones into a lethal weapon. The sophistication of this system is not at the level of American lethal drones, but highlights the desires of NK to enter the drone wars. The speed at which these nations are developing programs highlights how U.S. military successes with drones are changing strategic thinking worldwide.

b. Non-State Actors

Diffusion of drones to terrorists and other militants creates an even greater threat against American national interests. Just as the U.S. has weaponized its Predator drones, the next step for militants is to turn their drones into guided weapon systems.

⁹³ Siavosh Ghazi, "Iran Unveils New Attack Drone," *Yahoo News*, May 9, 2013, <http://uk.news.yahoo.com/iran-unveils-attack-drone-190842909.html#s9lMmDx>.

⁹⁴ Ali Akbar Dareini, "Iran Drones Reached Israel by the Dozens," *Huffington Post*, October 16, 2012, http://www.huffingtonpost.com/2012/10/16/iran-drones-israel_n_1970868.html.

⁹⁵ Robert Beckhausen, "Iranian Missile Engineer Oversees Chavez's Drones," *Wired*, Danger Room, June 18, 2012, <http://www.wired.com/dangerroom/2012/06/mystery-cargo/>.

⁹⁶ Brain Anderson, "North Korea is Testing a Fleet of Killer Drones," *Motherboard* (blog), March 20, 2013, <http://motherboard.vice.com/blog/north-korea-is-testing-a-fleet-of-killer-drones>.

Non-state actors are harder to regulate than state actors are, but this highlights the growing threat from the diffusion of the unmanned technology and tactics. Using a drone to carry out attacks presents many distinct advantages over conventional methods: ability to launch covertly from virtually anywhere, reach inaccessible targets, and cause mass panic with minimum risk to operators. While non-state actors have not attacked using a drone yet, there are already signs that militants are developing these weapons.

Hezbollah, the Lebanese terrorist group, has acquired Iranian-made drones that are flying over Israeli airspace.⁹⁷ Hezbollah unmanned technology is not of the same quality of the American or Israeli systems; however, they provide a significant capability for Hezbollah. An Israeli F-16 jet shot down a Hezbollah drone over the Mediterranean in August 2006 that had the ability to carry munitions. It was an Iranian-made Ababil-T, which can be fitted with a 45 kg warhead, although the Israeli military said the one it had downed was unarmed.⁹⁸ Hezbollah leverages U.S. precedent to justify its own drone use, claiming the right to self-defense as they gather intelligence over Israel. Without the American drone example, Hezbollah would have a difficult time justifying an offensive program to the international community. Critics may argue that Hezbollah would use drones despite the American precedent set, but Hezbollah most likely would not be using these systems if it were not for American diffusion of the technology and tactics.

There are numerous other examples of non-state actors acquiring or attempting to acquire unmanned systems to use for malign intentions. In 2004, the Palestinian militant group Hamas allegedly lost six members of its group when they died while packing explosives into a drone.⁹⁹ In September 2005, the Pakistani Army announced it had seized a Chinese-made drone in a raid on a suspected AQ hideout in North Waziristan. Lieutenant General Safdar Hussain told reporters that the militants had used the technology to “check the position of security forces and attack them,” adding

⁹⁷ Yeganeh Torbati, “Iran Has Advanced Drone Technology,” Reuters, October 28, 2012, <http://ebird.osd.mil/ebfiles/e20121029909777.html>.

⁹⁸ Ibid.

⁹⁹ Marc Goodman, “Attack of the Drones: The Dangers of Remote-Controlled Aircraft,” *Jane’s Intelligence Review*, December 16, 2011, <https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1196343&Pubabrev=JIR>.

that the vehicle was also capable of carrying weapons.¹⁰⁰ In 2006, a judge convicted Ali Asad Chandia, a teacher from Maryland in the U.S., for providing material support to the Pakistani jihadist group Lashkar-e-Tayyiba (LeT) by attempting to acquire a GPS guidance system for a model aircraft on the group's behalf.¹⁰¹ These examples highlight the threat and intentions of non-state actors to utilize drones for lethal operations. Fortunately, they have been unable to produce a system capable of lethal operations yet; obtaining the system is only half the fight.

Additionally, two U.S. security consultants proved what malign non-state actors may accomplish with the system called Wireless Aerial Surveillance Platform (WASP). The \$6,000 dollar system consists of a surplus military target drone that comes equipped with programmable GPS, a mobile telephone base station so it can intercept phone calls, and hacking capabilities to break into WIFI networks.¹⁰² For a relatively cheap price, these consultants highlighted the existence of capabilities available to non-state actors that provide rudimentary signals intelligence.

Finally, an even greater threat to the homeland comes from homegrown or lone wolf actor's possession of unmanned technology. DIY kits aid in building drones for lone wolves or homegrown terrorists.¹⁰³ In September 2010, Rezwan Ferdaus, a 26-year-old Northeastern University physics graduate of Bangladeshi descent, planned to attack the Pentagon and Capitol building with remote-controlled planes measuring up to 80 inches in length and capable of speeds greater than 100 miles per hour, guided by GPS, and containing five pounds each of plastic explosives.¹⁰⁴ It is unlikely that the

¹⁰⁰ *Pravda News*, "Pakistan Destroys Major al-Qaida Hide-out in Military Operation near Afghanistan," *Pravda Hotspots and Incidents*, September 13, 2005, <http://english.pravda.ru/news/hotspots/13-09-2005/65825-0/>.

¹⁰¹ Goodman, "Attack of the Drones," 2011.

¹⁰² *Ibid.*

¹⁰³ Singer, *Wired for War*, 270.

¹⁰⁴ Brian Ballolu, "Rezwan Ferdaus of Ashland 17 Years in Terror Plot," Boston, November 1, 2012, <http://www.boston.com/metrodesk/2012/11/01/rezwan-ferdaus-ashland-sentenced-years-terror-plot/KKvy6D6n2PfXfbEfA4iMwJ/story.html#sthash.oylCE2e8.dpuf>.

planes would have had as much impact as Ferdaus desired, yet the case highlights the rapid diffusion of advanced technology to homegrown terrorists and the potential threat they pose.¹⁰⁵

2. Lower Aggression Threshold

Exports of unmanned technology for partner-nations capacity building are creating long-term consequences of lowering the aggression threshold. Experts agree that drones provide less military and political risk for lethal operations, which will lower the threshold for hostile actions by SANSAs.¹⁰⁶ U.S. exports provide partner nations capabilities to target their own enemies without international norms or guidelines for the use of these systems. SANSAs are learning from the successful precedent set by American, British, and Israeli drone strikes against threats to national interests. These operations could affect relations between nation-states involved, but also destabilize entire regions and potentially upset geopolitical order.

SANSAs that acquire drones are able to conduct extraterritorial lethal operations following the American precedent. As with Operation Nomad, Turkey currently benefits from American Predators conducting surveillance and gathering intelligence on PKK rebels, but it could begin arming its indigenous drones and conduct cross-border strikes into Iraq. Turkey is a NATO ally and such operations risk pulling many other nations into a regional conflict. China's consideration to use an armed drone to strike cross border into Myanmar raise these issues again; what if it wanted to conduct a strike into South Korea or against a Taiwanese trawler in the South China sea?

These events may become more prevalent as SANSAs acquire drones without international norms that regulate lethal operations. According to Micah Zenko, a security policy and drone expert at the Council of Foreign Relations, "We don't like other states using lethal force outside their borders. It is destabilizing. It can lead to a sort of wider

¹⁰⁵ Torbati, "Iran Has Advanced Drone Technology," 2012.

¹⁰⁶ Singer, *Wired for War*, 231.

escalation of violence between two states.”¹⁰⁷ The diffusion of drones is not only about protecting American national interests, but it is becoming more about SANSA increasing ability to use lethal force outside of their borders.

There is a difference in making the decision to deploy troops into a country and utilizing drones. That is why unmanned aircraft currently account for 95 percent of American lethal operations.¹⁰⁸ The decision to deploy a drone to collect needed intelligence and conduct a lethal strike is easier than invading a neighboring country. If the U.S. did not have armed drones, it surely would not have conducted as many lethal strikes into Pakistan and Yemen as it has over the past decade. If this precedent is true for the U.S., then it stands true for other SANSA that own and arm unmanned systems. Zenko agrees, arguing, “When other states have this technology, if they follow U.S. practice, it will lower the threshold for use of lethal force outside their borders. So they will be more likely to conduct targeted killings than they have in the past.”¹⁰⁹

3. Drone Counter-Measures

Diffusion is fostering long-term consequences of SANSA developing drone counter-measures. SANSA are attempting to exploit weaknesses in drone satellite links and remote controls that pilots utilize to fly the systems. Whether it is Iranian military efforts to develop high-tech hacking software or al-Qaeda’s low-cost “tip-sheet,” adversaries are looking for ways to defeat the very weapons that have dominated the skies throughout the past decade. The veracity of some of counter-measures mentioned are unconfirmed but raise concern to the growing threat to drone operations. As unmanned technology continues to evolve, so will the counters that American adversaries develop.

A significant threat to American drones comes from reverse engineering. Reverse engineering involves taking apart an aircraft to see how it works in order to copy,

¹⁰⁷ Kristin Roberts, “When the Whole World Has Drones: The Precedents the U.S. has Set for Robotic Warfare May Have Fearsome Consequences as other Countries Catch Up,” *National Journal*, March 22, 2013, <http://www.nationaljournal.com/magazine/when-the-whole-world-has-drones-20130321>.

¹⁰⁸ Roberts, “When the Whole World Has Drones,” 2013.

¹⁰⁹ Ibid.

enhance, or defeat the system. Drones crash, whether mechanical failure or shot down, providing adversaries with opportunities to exploit recovered U.S. technology.¹¹⁰ According to a database that tracks medium and long-range drone crashes, there are currently over 100 American and Israeli drone crashes that have occurred since January 2007.¹¹¹ The majority of these losses occurred in countries without western military presence: Somalia, Syria, Pakistan, Lebanon, and Yemen.

In December 2011, Iran claims to have captured several American drones, most significantly the RQ-170 Sentinel.¹¹² A primary American concern was that Iran might reverse engineer the radar-deflecting paint coating and special optics, perhaps with help from Russia and China. It is unknown whether Iran did this, but Tehran claims to have copied the stealth technology and built its Epic drone along the lines of the Sentinel.¹¹³ Reverse engineering the American stealth technology not only allows adversaries to enhance their own capabilities, but also provides opportunities to develop drone counter-measures that will prove detrimental to the U.S. in future conflicts.

Significant counter-measures include the threat of hacking, intercepting, or infecting the drone software. “Spoofing” is a form of hacking that creates false GPS signals tricking the aircraft’s receiver, both time and location, into thinking everything is ok as hackers steer a new course.¹¹⁴ Spoofing allows hackers to take control of a drone and either crash or commandeer the system. A recent demonstration by University of Texas at Austin, researchers is the first known demonstration that highlights spoofing is technically feasible.¹¹⁵ Using a small but sophisticated UAV along, with hardware and

¹¹⁰ Ewen MacAskill, “Iran Claims to Have Reversed-Engineered US Spy Drone,” *The Guardian*, April 22, 2012, <http://www.theguardian.com/world/2012/apr/22/iran-reverse-engineer-spy-drone>.

¹¹¹ Drone Wars UK, *Drone Crash Database*, last modified October 12, 2013, accessed October 24, 2013, <http://dronewars.net/drone-crash-database/>.

¹¹² Adam Rawnsley, “Iran Shows off Captured U.S. Drone, Swears It’s No Fake,” *Wired*, December 8, 2011, <http://www.wired.com/dangerroom/2011/12/iran-drone-video/>.

¹¹³ Torbati, “Iran Has Advanced Drone Technology,” 2012.

¹¹⁴ Lorenzo Franceschi-Bicchierai, “GPS Hijacking Catches Feds, Drone Makers off Guard,” *Wired*, July 19, 2012, <http://www.wired.com/dangerroom/2012/07/drone-gps-spoof/>.

¹¹⁵ Todd Humphreys, “Cockrell School Researchers Demonstrate First Successful ‘Spoofing’ of Drones,” University of Texas, Austin, June 27, 2012, <http://www.engr.utexas.edu/features/humphreysspoofing>.

software they developed, the research team repeatedly overtook navigational signals going to the GPS-guided vehicle. Although much easier to do on commercial GPS systems, experts claim that spoofing military GPS systems is a valid technique.¹¹⁶ Adversaries are showing significant interest in hacking into drone software to steal or divert the aircraft.

Iran is publically acknowledging concerns over American drones and voicing its interest in hacking them. The state run news agency reported the introduction of high school curricula on bringing down foreign drones through hacking.¹¹⁷ Iranian officials claim expertise in “spoofing” and using this technique to down the American Sentinel mentioned earlier, but those claims are unconfirmed.¹¹⁸ It is unknown if Iran’s schools have the capability or technological expertise for such lessons. However, this gives a clear sense of Iranian officials’ attitude and intentions toward American drones.

Hacking builds on recent history of security flaws with American drones, from their unencrypted video feeds to their vulnerability to malware. U.S. military officials discovered that insurgents in Iraq used the SkyGrabber, a downloadable program, to hack into video feeds from Predator drones.¹¹⁹ Iranian-backed groups intercepted satellite data; this allows them to view, record, and share video relayed by unmanned systems. This poses a significant risk as intercepted drone data could be used to spy on American bases and other troop locations.

Infection of drone software is another threat that a hacker or someone with access to the systems can pose. In March 2011, an unknown software glitch caused a Predator stationed at a U.S. base in Djibouti, Africa to start its engine without human direction. Technicians concluded that a software bug had infected the “brains” of the drone, but

¹¹⁶ Humphreys, “Cockrell School Researchers,” 2012.

¹¹⁷ Natasha Lennard, “Iran High Schools to Teach Drone Hacking,” *Salon*, August 19, 2013, http://www.salon.com/2013/08/19/iran_high_schools_to_teach_drone_hacking/.

¹¹⁸ Rawnsley, “Iran Shows off,” 2011.

¹¹⁹ Gaylord, “SkyGrabber,” 2009.

never pinpointed the problem.¹²⁰ Additionally, Air Force technicians discovered a virus infecting drone remote cockpits at Creech AFB, Nevada in October 2011.¹²¹ Malware had apparently made its way onto cockpit computers because someone used it to play the Mafia Wars video game. It took weeks of sustained effort to clean up the machines. Hackers can exploit these vulnerabilities with cheap commercially available hardware and software.

Non-state actors are also looking at exploiting drone weaknesses. Since 2010, AQ has assigned cells of engineers to find ways to shoot down, jam, or remotely hack U.S. drones.¹²² They have recently become increasingly open about their desire to counter American drones. In March 2013, AQ published an article titled “The Drone Chain” that not only reassures readers that jihadists are working on various techniques to hack, manipulate, and destroy drones; but asks for members to develop new counter-measures and share throughout the network.¹²³ AQ is apparently sponsoring work on GPS and infrared tag jamming amongst many high-tech counters.

In the absence of high-tech counter-measures to drones, AQ is developing basic defensive counter-measures, with a 22-item “tip sheet.” Their hope is to share knowledge and reduce the number of casualties across the network. *The Associated Press* found a copy of the tip-sheet in Mali, left behind after recent fighting in 2012.¹²⁴ A Yemeni jihadist wrote the list two years earlier and had been circulating it among AQ franchises since then. The tip sheet advises militants to hide under thick trees, stay in the shadows, cover up their vehicles, stay away from their parked cars, hold meetings

¹²⁰ Craig Whitlock, “Remote U.S. Base at Core of Secret Operations,” *The Washington Post*, October 25, 2012, http://www.washingtonpost.com/world/national-security/remote-us-base-at-core-of-secret-operations/2012/10/25/a26a9392-197a-11e2-bd10-5ff056538b7c_print.html.

¹²¹ Rawnsley, “Iran Alleged Drone Hack,” 2011.

¹²² Craig Whitlock and Barton Gellman, “Al-Qaeda Takes Aim at Drones,” *Washington Post*, September 4, 2013, http://www.washingtonpost.com/world/national-security/us-documents-detail-al-qaedas-efforts-to-fight-back-against-drones/2013/09/03/b83e7654-11c0-11e3-b630-36617ca6640f_story.html.

¹²³ Whitlock, “Al-Qaeda Takes Aim at Drones,” 2013.

¹²⁴ Dugald McConnell and Brian Todd, “Militant Tipsheet: How to Avoid a Drone Strike,” *CNN*, February 23, 2013, http://www.cnn.com/2013/02/22/world/meast/drone-dodging/index.html?hpt=hp_t2.

indoors, and avoid using cell phones. If they hear a drone approaching, they are advised to scatter in multiple directions or set up dummies as decoys.

Finally, Stealth Wear is developing a new clothing line that advertises anti-drone capabilities. The clothing line includes hoodies, scarves, hats, and t-shirts advertised to make individuals invisible to thermal imaging cameras widely used throughout the drone community.¹²⁵ This line includes additional garments that will protect from x-ray machines and anti-phone pockets that allow users to zero out phone's signal. Terrorist can now remain stylish while hiding from drone thermal imagers. The capability of the clothing line is unconfirmed; however, coupled with the counter-measures from the al-Qaeda tip sheet, it would increase the effectiveness against drone sensors.

After the reviewing the previously mentioned short-term benefits compared with the long-term consequences, this analysis concludes that American diffusion myopia is indeed threatening global security as technology outpaces regulations. The desire of drone industry officials to remain competitive in a growing global market is affecting the MTCR and Wassenaar agreements. Administration officials are considering reducing restrictions on exports to build partner nation capacity and expand research and develop. Weakening the agreements will allow for adversarial nations to not only acquire their own systems, lowering the aggression threshold, but it allows them to develop drone counter-measures that jeopardizes the American program.

¹²⁵ Gregory Ingersoll, "Check out This Drone-Proof Counter Surveillance Clothing," *Business Insider*, January 9, 2013, <http://www.businessinsider.com/check-out-this-drone-proof-counter-surveillance-clothing-2013-1>.

THIS PAGE INTENTIONALLY LEFT BLANK

III. ETHICAL AND LEGAL MYOPIA

These [drone] strikes are legal, they are ethical and they are wise.

James Carney, White House Press Secretary, 2013¹²⁶

A. OPERATIONS OUTPACING POLICY

As unmanned technology diffuses to SANSA, the U.S. faces an increasing threat from ethically and legally myopic drone policies. As critics and advocates debate legalities and their ethical use as weapons of war, administration officials continue to conduct lethal operations. The U.S. currently wages war not against an established nation-state, but against transnational criminal and terrorist organizations, which have no embassies, no recognized government, and no legitimate political representation anywhere in the world. Undoubtedly, drones have killed large numbers of militants across the globe and reduced AQ's ability to attack the American homeland. Yet, the lack of transparent national policy sets a dangerous precedent for SANSA to use drones inconsistent with American interests.

America is one of the world's leading democracies. However, past administrations adopted a foreign policy that relies on its "classified" drone program, which is sparingly discussed by administration officials and has been framed on legal advice never properly explained. The Obama administration uses its executive power to refuse or ignore requests by Congressional inquiries and resists monitoring by federal courts.¹²⁷ What makes drones so dangerous is the lethality and efficiency diffusing in a global environment, which lacks internationally accepted norms on ethical and legal drone use. The U.S. continues using drones in the short-term to target "imminent" threats to national security with "classified" reasoning, which administration officials are unlikely to endorse in the long-term for other SANSA.

¹²⁶ James Carney, "Carney: Drone Strikes 'Legal,' 'Ethical,' 'Wise,'" *Washington Free Beacon*, February 5, 2013, <http://freebeacon.com/carney-drone-strikes-legal-ethical-wise/>.

¹²⁷ Roberts, "When The Whole World Has Drones," 2013.

Facing the possibility of not winning a second term in 2012, the Obama administration made a concerted effort to codify drone use for future administrations. The “Drone Rulebook” was to provide new presidents explicit ethical and legal rules for lethal drone operations.¹²⁸ Obama stated:

One of the things we’ve got to do is put a legal architecture in place, and we need Congressional help in order to do that, to make sure that not only am I reined in but any president is reined in terms of some of the decisions that we’re making.¹²⁹

However, as elections finished so did the hopes of codifying a long-term American policy.

In 2013, under increasing public and congressional pressures, administration officials released the DOJ “white paper” in February and Obama gave a major drone policy speech in May at the National Defense University (NDU). The DOJ white paper outlined legal guidelines for the administration’s lethal operations, specifically that targets must present an imminent threat, capture must be infeasible; and the killing carried out according to fundamental principles of the laws of war governing the use of force: necessity, distinction, proportionality, and humanity.¹³⁰ However, the memo’s vagueness of key terms, such as imminent, sets global precedents for other SANSAs program justification. This document added little new substance to what administration officials had already publically proclaimed about legalities of American drone policy.

Obama’s May 2013 speech to students at NDU outlined the administrations desires to codify drone operations framed using traditional *just war theory* (JWT). The president stated American lethal drone operations are just, proportional, in last resort, and in self-defense.¹³¹ He understands the need to restrain the power drones provide, or

¹²⁸ Shane, “Election Spurred a Move,” 2012.

¹²⁹ Jon Stewart, “Barack Obama Extended Interview,” *The Daily Show*, October 18, 2012, <http://www.thedailyshow.com/watch/wed-october-27-2010/barack-obama-pt--1>.

¹³⁰ U.S. Department of Justice, “Lawfulness of a Lethal Directed Against A U.S. Citizen Who is a Senior Operational Leader of Al-Qaeda or An Associated Force,” Global Security, last modified November 8, 2011, accessed February 4, 2013, <http://www.globalsecurity.org/security/library/policy/national/doj-wp-imminent-threat.htm>.

¹³¹ White House, “Remarks by the President,” 2013.

SANSA may abuse the capabilities. Prior to the speech, Obama signed a presidential policy guidance that seeks to set guidelines for future policy. The intent is for this policy to guide international norms and regulations for future use of unmanned systems. However, the Obama administration has yet to codify a national drone policy.

American myopia is creating two distinct issues for future use of drones. The first issue pertains to the lack of ethical justifications. In the short-term, traditional JWT provides American officials the ability to conduct lethal operations with drones to defend the nation from unjust threats.¹³² If administration officials meets the criteria for going to war (*jus ad bellum*), the use of drones is morally feasible in pursuit of a just cause. However, in the long-term, SANSA may deem a perceived threat a just cause, but may not meet all *ad bellum* criteria. The lack of transparent ethical justifications to use drones for lethal operations creates a murky standard that other SANSA will follow. As America finds itself entangled with a global network of non-state actors and nations that sponsor them, it is imperative to seek clearer ethical justifications in order to guide formation of national drone policy.

The second myopic issue involves the American legal framework based on the authorization for the use of military force (AUMF). The U.S. government legally argues that the nation is engaged in a war with AQ and its affiliates.¹³³ In the short-term, the “global” war and the authorities provided in the AUMF enables drones as legal tools to conduct lethal operations against “imminent” threats. Yet, in the long-term, there are dangers of creating international “blowback” from lethal operations. Not only are there innocent civilians being killed, but there are others that seek to fight the U.S. because of strikes that have damaged their property or killed family members. The consequences of

¹³² Matthew W. Hallgrath, “Just War Theory and Remote Military Technology: A Primer,” in *Killing by Remote Control*, ed. Bradley Jay. Strawser (New York: Oxford University Press, 2013), 36.

¹³³ The AUMF authorized the President to “use all necessary and appropriate force against those nations, organizations, or persons he determines planned, authorized, committed, or aided the terrorist attacks that occurred on September 11, 2001, or harbored such organizations or persons, in order to prevent any future acts of international terrorism against the United States by such nations, organizations or persons.” The resolution gave the president the freedom to decide who was connected to the attacks, who might be implicated in future attacks, and what level of force could be used against them. At the same time, he was unconfined by any temporal or geographical limits.

these strikes may have a long-term effect on American global standings and will again create a precedent for other SANSAs as they seek to use drones for similar purposes.

The following is an examination of the short-term benefits and the long-term consequences of the issues listed above to determine if American strategy is ethically and legally myopic to determine the extent of threat posed to national interests.

B. SHORT-TERM BENEFITS

1. Self-defense

The JWT provides ethical guidelines for American use of drones in self-defense, as decision-makers remain morally obligated to protect soldiers from unnecessary risk. Against a just cause, drones provide ethically feasible tools and capabilities to limit terrorists' safe havens while defending American troops and the homeland. CIA Director John Brennan has stated that American drone use is, "consistent with the inherent right of self-defense."¹³⁴ The JWT serves as the basis for the laws and policies that govern how modern nations enter into conflict and wage war.

The JWT is the oldest and most respected gauge to determine if decisions made in wars and armed conflicts are ethical, benefiting from centuries of philosophical review and development.¹³⁵ The theory is traditionally divided into three separate concepts for ethical decisions made in war: *jus ad bellum* (rightness of starting a war), *jus in bello* (rightness of fighting in war), and *jus post bellum* (rightness of behavior after a war). *Jus in bello* frames the conduct in war, specifically the means of war. These means include, but are not limited to, the weapons used, the effects the weapons cause, and the tactics and strategies adversaries wage combat.¹³⁶ The principles of *jus in bello* deem weapons morally permissible if they are necessary, proportional to attacks, discriminate against

¹³⁴ Isikoff, "Justice Department Memo," 2013.

¹³⁵ Walzer, *Just and Unjust Wars*, 3.

¹³⁶ Matthew B. Holmes, "Just War and Applicability to Targeted Killing," Master's thesis, Army Command and General Staff College, 2010.

targets, and respect the immunity of innocent civilians. President Obama has proclaimed that the American drone operations are just, proportionally waged, and used only in self-defense.¹³⁷

Drones remain a tool of American arsenal to use in defense of the nation. Moral responsibility falls on the agents, American officials, using these tools not the tools themselves.¹³⁸ The individuals that use drones are subject to moral judgment for the immoral actions they conduct with drones. If the cause is just and operators apply justificatory burdens of discrimination and proportionality, then utilizing these tools is justified. In principle, the U.S. remains ethically justified to use drones in self-defense for a just cause, and can even be morally obligated to use them under certain conditions.¹³⁹ Adherence to the JWT provides guidelines for the framing of laws that govern weapon use in combat and will not only frame American policy, but also international norms for the future use of drones.

2. Lethal Operations

Lethal drone operations provide the short-term benefit of monitoring and eliminating threats to national interest. As highlighted earlier, the authorization for the use of military force (AUMF) and DOJ white paper provide the publically acknowledged authorities to conduct lethal drone operations. These legal precedents provide the U.S. with guides to conduct a “global” war against AQ and its affiliates. Lethal drone operations have drawn considerable debate about the legal authorities for conducting such operations. These lethal operations have various names, including personality or signature strikes (see Figure 3).

¹³⁷ Lara Jakes, “Obama to address Drones, Gitmo in Security Speech,” Associated Press, May 22, 2013, <http://news.yahoo.com/obama-address-drones-gitmo-security-speech-102600910.html>.

¹³⁸ Hallgrath, “Just War Theory and Remote Military Technology,” 35.

¹³⁹ Bradley Jay Strawser, “More Heat than Light: The Vexing Complexities of the Drone Debate,” 3 *Quarks Daily*, February 25, 2013, <http://www.3quarksdaily.com/3quarksdaily/2013/02/more-heat-than-light-the-vexing-complexities-of-the-drone-debate.html>.

“Personality strikes” and “signature strikes”

International criticism has been directed in particular against the so-called “signature strikes”. In these cases, the precise names and functions of targeted persons are unknown. Those responsible for the strikes merely assume that the target is a member of a hostile group based on a review of circumstantial evidence such as movement profiles, intercepted communications, and known associates. The underlying assumption is that urbanised al-Qaida members will only be sheltered by active supporters when traveling in rural Pakistan, so as to avoid being betrayed by informants. According to reports, the US therefore regards all adult males in immediate proximity to the jihadists as legitimate military targets. This assumption in particular is frequently criticised by the international community.

“Personality strikes”, on the other hand, are based on personal information about individuals identified by name. If attempting their capture would pose an unacceptable risk to friendly forces, drones may be deployed against them. In these missions, according to members of the US government, considerable efforts are made to prevent the deaths of innocent bystanders. According to these sources, many attacks have been aborted because of the presence of women or children near the target. However, as outlined above, such restraint is not exercised in the case of able-bodied males of military age; nor are such victims listed as “civilian casualties” in US statistics.

Figure 3. Definition of Personality and Signature Strikes¹⁴⁰

Whatever term used, American lethal drone operations are setting international standards for dealing with threats. On August 9, 2013, Israel utilized a drone to conduct a lethal strike in Sinai airspace, long known for using lethal drone operations in Gaza or Lebanon; this was the first strike outside these areas. The strike, approved by Egyptian officials, killed five militants that were preparing to launch a rocket into Israel.¹⁴¹ The Sinai is a safe-haven for militants that use the area for smuggling and other criminal activities, specifically cross-border attacks into Israel.¹⁴² In another incident, on April 30, 2013, British military conducted its first remote drone strike, carried out from Lincolnshire, striking a target more than 3,000 miles away in Afghanistan.¹⁴³ Similar lethal cross-border operations will continue as additional SANSA acquire advance unmanned technology and mirror the precedence set by the U.S., Britain, and Israel.

¹⁴⁰ Martin Zapfe and Perm Mahadevan, “Descending Drones,” July 2013, Center for Security Studies, <http://www.css.ethz.ch/publications/pdfs/CSS-Analysis-137-EN.pdf>.

¹⁴¹ David Schenker, “How the Israeli Drone Strikes in the Sinai Might Backfire,” *The Atlantic*, August 13, 2013, <http://www.washingtoninstitute.org/policy-analysis/view/how-the-israeli-drone-strike-in-the-sinai-might-backfire>.

¹⁴² Ibid.

¹⁴³ Chris Cole, “First British Drone Strike Carried Out from the UK RAF Waddington,” *Drone Wars UK*, June 1, 2013, <http://dronewars.net/2013/05/01/first-british-drone-strike-carried-out-from-uk-raf-waddington/>.

The effectiveness of lethal operations is debatable, but several factors highlight why the U.S. continues to use drones despite long-term consequences. First, strikes are creating tension within the terrorist networks by eliminating leaders, planners, and experienced technical operators (bomb makers). This has a lasting effect on the network through the replacement of key members by new and less experienced militants. The impact of the strikes is evident from the actions of militants in the FATA. They regularly complain to Pakistani officials in attempts to intimidate them into stopping support of American drone operations, simultaneously murdering local tribal leaders who they suspect of being spies for CIA and Pakistani intelligence.¹⁴⁴ These actions not only highlight growing paranoia in the FATA dark networks, but also serve as an alienating device for locals whom are even more tempted to inform the authorities.

Second, drones are killing more high-value targets than civilians. Although collateral damage does occur, drones kill a lower ratio of civilians to combatants than seen in any recent war.¹⁴⁵ Accurate civilian casualty estimates are difficult to obtain, but estimates of Afghani civilian deaths in 2011 alone (1,462) eclipse the past 11 years of civilian deaths from drones (996).¹⁴⁶ Conventional air power and bombs are far less accurate and likely to cause more civilian casualties. Additionally, there is no guarantee that boots on the ground will not cause innocent civilians deaths leading to further danger to the troops (see Table 4). Drone strikes appear to be a better option to limiting civilian casualties than other options.¹⁴⁷ President Obama highlights the fact that a lack of an

¹⁴⁴ Dave Sloggett, "The Utility of Using UAVs in Fighting Terrorism," *Jane's Intelligence Review*, July 10, 2013, <https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1196017&PubAbrev=JIR>.

¹⁴⁵ William Saletan, "Drones are the Worst Form of War, Except for All the Others," *San Jose Mercury News*, February 21, 2013, http://www.mercurynews.com/ci_22628998/drones-save-civilians-bombs-more-deadly?IADID=Search-www.mercurynews.com-www.mercurynews.com.

¹⁴⁶ Damien Pearse, "Afghan Civilian Death Toll Reaches Record High," *The Guardian*, February 4, 2012, <http://www.theguardian.com/world/2012/feb/04/afghan-civilian-death-toll-record>.

¹⁴⁷ Plaw, "Counting the Dead," 148.

U.S. drone program would invite far more civilian casualties.¹⁴⁸ Terrorists remain committed to targeting civilian populations and death tolls from their attacks are greater than drone estimates.

	Total Fatalities	Civilian Fatalities	Civilian Casualties (%)
U.S. Drone Operations in FATA 2004 - 2013 (Avg 4 databases)	2649	241	9.09
Nondrone U.S. Operations in FATA 2011	32	12	37.5
Pakistani Army Operations in FATA 2002 - 2007	1440	451	31.31
Israeli Targeted Killings 2000 - 2011	427	175	40.98
Estimated World Combat Average for the 1990s	N/A	N/A	88.89

Table 4. Civilian Death Rates in Comparative Campaigns¹⁴⁹

Additional proponents argue the effectiveness of drones and the limited number of civilian casualties. Mark Bowden, author of *Black Hawk Down*, uses the previously mentioned four drone databases to show limited numbers of deaths within a 19-month period.¹⁵⁰ Taking the highest estimates between January 2012 and July 2013, Bureau of Investigative Journalism (TBIJ) shows there were approximately 65 drone strikes in Pakistan, which it estimates to have killed a minimum of 308 people, four being civilians, amounting to a civilian casualty rate of less than 1.5 percent.¹⁵¹ This means that only one

¹⁴⁸ Dan Roberts, "Obama Restricts Drone Killing and Foresees End to Perpetual War," *The Guardian*, May 23, 2013, <http://www.theguardian.com/world/2013/may/23/obama-drone-policy-counter-terrorism>.

¹⁴⁹ Plaw, "Counting the Dead," 148.

¹⁵⁰ Lewis, "Drones: Actually the Most Humane," 2013.

¹⁵¹ Bureau of Investigative Journalism, *Covert Wars on Terror: The Data Sets*, last modified August 1, 2013, accessed September 3, 2013, <http://www.thebureauinvestigates.com/2013/01/03/obama-2013-pakistan-drone-strikes/>.

in 65 casualties occurred by drones strikes during this period were civilian; this speaks to drones effective discrimination between civilian and military targets that no other weapons system can possibly match.¹⁵²

Additionally, Afghan President Hamid Karzai provided another indication that drones cause less civilian causality than traditional warfare. In 2011, the U.S. was employing all types of units in Afghanistan, ground troops, airstrikes, artillery, and drones. However, the source of friction with the Afghan government was not drones but rather Special Forces night raids, which Karzai proclaimed he would withhold further cooperation until his government obtained greater control over night raids.¹⁵³ American drone use did not cause him or the Afghan people any significant concern.¹⁵⁴

Third, lethal drone operations have taken away the initiative from AQ and its affiliates as they are losing sanctuary to plan, rehearse, and train for attacks. AQ members are more worried now about death by drones and developing counter-measures than plotting against America (see Chapter II). AQ leader's ability to communicate is degraded. Due to concerns of spies on the ground and in the air, limiting use of phones and radios, leaders have to rely on slower forms of communications such as couriers.¹⁵⁵ The inability to communicate adequately across the network, train, and plan attacks is further degrading abilities to conduct attacks.

Fourth, drones are morally cost-effective for operators. Operators receive lethal orders like any service member involved in combat operations, yet remain at a safe distance from combat. Operators do not have to deal with moral and ethical situations on a daily basis as do soldiers on the ground. Lawful orders direct operators to conduct kinetic operations, while operators maintain the ability to not launch or change direction of missile if the situation changes. Standard operating procedures (SOP) ensure that split

¹⁵² Lewis, "Drones: Actually the Most Humane," 2013.

¹⁵³ Hamid Shalizi, "End Night Raids before Afghan Deal: Karzai," Reuters, November 16, 2011, <http://www.reuters.com/article/2011/11/16/us-afghanistan-jirga-idUSTRE7AF1Y920111116>.

¹⁵⁴ Michael W. Lewis, "Drones: Actually the Most Humane Form of Warfare Ever," *The Atlantic*, August 21, 2013, <http://www.theatlantic.com/international/archive/2013/08/drones-actually-the-most-humane-form-of-warfare-ever/278746/>.

¹⁵⁵ Sloggett, "The Utility of Using UAVs," 2013.

second decisions are morally easier for operators, taking them out of the equation unless there is a last-minute change. The decisions to launch a missile from a manned or unmanned aircraft are similar, except drone pilots are located in safe locations away from harm. Decision-makers at the highest level of command make the recommendations to conduct lethal strikes, not the operator.

Finally, American lethal drone operations provide the opportunity to work with and through partner nations to disrupt dark networks. Critics argue that drone operations violate the sovereignty of nations, but this is far from the truth as recently highlighted in the *Abbottabad Commission Report*. The U.S. actively coordinates and conducts lethal operations with the knowledge and consent of the states, despite nation's public denial due to political sensitivities.¹⁵⁶ The majority of these governments attempt to hide its role in the U.S. drone program due to domestic political issues, but behind the scenes these government leaders continue to allow the drones strikes. This is a critical point in American myopia, as it justifies its use by receiving the consent of nations that share a common enemy and lack the capabilities to target the networks. As the U.S. expands its drone bases, it is apparent that other governments are complicit in U.S. drone use in their countries.

C. LONG-TERM CONSEQUENCES

1. Adversarial Justification

The lack of a transparent legal justification creates long-term consequences that threaten the international community. The most significant is SANSA reasoning to use the same ethical and legal justifications for its own programs. Circumventing international human rights law for capturing targets when possible encourages SANSA to declare their own “global war” to target “imminent” threats. These arbitrary declarations,” when no such conflict exists, allows SANSA to kill at will. This is already

¹⁵⁶ Neha Ansari, “Drones Not a Violation of Our Sovereignty,” *The International Herald Tribune*, July 23, 2013, <http://tribune.com.pk/story/580923/drones-not-a-violation-of-our-sovereignty/>.

happening as highlighted earlier (Chapter I) with the China desire to target a drug lord in Myanmar, and it is only a matter of time before non-state actors have similar capabilities and intentions.

The AUMF provides American legal justification for lethal drone operations, while the DOJ “white paper” lays out general guidelines. These documents authorize the United States to conduct lethal drone operations when an individual poses an “imminent threat,” capture is infeasible, and is consistent with the four fundamental of laws of war—necessity, distinction, proportionality, and humanity.¹⁵⁷ Created after the 9/11 attacks, these authorizations allowed for short-term targeting operations yet are now outdated as the threat and political environment is evolving. This legal framework provides the U.S. ability to continue to use drones, but is myopic in that it fails to account for the SANSAs acquisition of similar capabilities and intentions.

There are no international recognized laws that govern the use of drones. U.S. legal justification for its use of drones relies on a “global war” concept that treats the entire world as a battlefield. President Obama’s policy guidance highlights the need for transparency and the requirement to limit drone use.¹⁵⁸ However, the lack of regulation of drone use sets a dangerous precedent as other SANSAs develop similar drone programs. The U.S. lacks concerted efforts to address long-term legal consequences while reaping short-term benefits already discussed. Its classified legal justification does not provide legal direction for other SANSAs programs.

The lack of international law governing drones is already creating additional long-term consequences as adversaries acquire systems. International Human Rights Laws (IHRL) or the Law of Armed Conflict advocates transparent development of laws, which will regulate future use of these systems. Human Rights First legal director Dixon Osburn welcomed the White House’s pledge for more transparency but remained “deeply concerned that the administration appears to be institutionalizing a problematic targeted

¹⁵⁷ Amnesty International, “The Devil in the (Still Undisclosed) Details: Department of Justice ‘White Paper’ on use of Lethal Force against U.S. Citizens Made Public,” *Amnesty International Library*, February 2013, <http://www.amnesty.org/en/library/asset/AMR51/006/2013/en/0ac105b2-c558-4892-9bce-e80c97113bf9/amr510062013en.pdf>.

¹⁵⁸ Roberts, “Obama Restricts Drone Killing,” 2013.

killing policy without public debate on whether the rules are lawful or appropriate.¹⁵⁹ Public debate will bring the capabilities and dangers of drones to the foreground for framing of international laws. Additionally, lack of transparency lessens the credibility of the nation as an advocate of human rights. This sets a dangerous precedent that other SANSAs will use to avoid responsibility for their programs of targeted killing. If American legal myopia remains unchecked, there is a risk that lethal drone operations will weaken the international framework for protection of human rights.

The use of drones against an imminent threat is morally sound in principle and sometimes even in practice, but the abuse or misuse of lethal operations by SANSA pose the gravest threat to the international community. Without the transparency of its program, the U.S. is creating long-term consequences as SANSA seek to eliminate threats to their interests. The primary moral issue for lethal drone operations is the measuring, evaluation, and understanding of what constitutes an “imminent threat.”¹⁶⁰ American lack of transparency and definition of imminence provides SANSA a precedent to use drones for an otherwise unjust cause. The DOJ white paper and AUMF do not provide an adequate definition to frame international norms, leading SANSA to conduct drone strikes against a target that is not posing an imminent threat, hence not liable, and falsely claimed as defensive. Strawser argues that while some drone strikes have met the proper threshold for imminent threat, others have not.¹⁶¹ Without transparency of data used for such operations, there is no proper way to know what is correct. These norms create a dangerous precedent for future drone use.

2. Blow Back

AUMF legally authorizes lethal drone operations, yet collateral damage is causing long-term blow back for America and the international community. U.S. reliance on drone strikes allows adversaries to cast America as a distant, high-tech, amoral death dealer. Lethal drone operations are building resentment, facilitating terrorist recruitment,

¹⁵⁹ Jakes, “Obama to address drones,” 2013.

¹⁶⁰ Strawser, “More Light Than Heat,” 2013.

¹⁶¹ Ibid.

and alienating those we seek to protect. Drone strikes may degrade terrorist networks, but they may also create more problems than they solve.¹⁶² The “global war” concept, discussed earlier, provides legal justification for continued use of drones, yet the strategy fails to consider long-term consequence of how civilians in these nations feel about living under constant threat of drone strikes.

Drones cause feelings of resentment amongst civilians that live under the threat they pose. General Stanley McChrystal, former Commander of NATO forces in Afghanistan, stated there is a “visceral hatred against Americans and the use of drones for lethal targeting.”¹⁶³ Drones primarily operate over denied or restricted areas where the military has few “boots on the ground.” This creates a significant long-term challenge to investigate civilian harm and making amends for suffering or losses.¹⁶⁴ Gul Nawaz, a Pakistani civilian, lost his family of 11 and house from an errant drone strike.¹⁶⁵ He fails to understand morally how this is justified, while his claims for clarification go unanswered, along with numerous others.

The perception that the U.S. continues to kill large number of civilians is outraging civilians in countries like Yemen, Somalia, and Pakistan. The hope is that more transparency will help calm the dissent against American drone strikes. Many people inside and outside the government have argued for far greater candor about all of the strikes, saying excessive secrecy has prevented public debate in Congress or a full explanation of their rationale. Experts say lethal operations are deeply unpopular, in part due to allegations of large numbers of civilian casualties, which American officials say are exaggerated.¹⁶⁶ The results of a July 2009 Gallup poll showed that only nine percent

¹⁶² Kurt Volker, “The Risk of Relying on Drones,” *Washington Post*, October 28, 2012, <http://ebird.osd.mil/ebfiles/e20121028909732.html>.

¹⁶³ Paul Bertorelli, “Drones: More Questions than Answers,” *AVWEB* (blog), February 13, 2013, http://www.avweb.com/blogs/insider/AVwebInsider_DronesProliferate_208164-1.html.

¹⁶⁴ Sarah Holewinski, *Civilian Impact of Drones: Unexamined Cost, Unanswered Questions* (New York: Center for Civilians in Conflict and Human Rights Clinic, Columbia Law School, 2012), 36, <http://web.law.columbia.edu/sites/default/files/microsites/human-rights-institute/files/The%20Civilian%20Impact%20of%20Drones.pdf>.

¹⁶⁵ *Ibid.*, 37.

¹⁶⁶ Shane, “Election Spurred a Move,” 2012.

of 2,500 Pakistanis interviewed supported the use of drones.¹⁶⁷ Additionally, a May 2010 poll carried out by the Regional Institute for Policy Research and Training reported that in the Swat Valley, which Taliban briefly controlled before a major military operation in 2009, showed 67 per cent of 384 people felt the drone attacks “provoked” the families of those killed.¹⁶⁸ These polls highlight the lack of support amongst the population for continued drone operations.

Militants take advantage of American lack of transparency and accurate data on strikes to frame global perceptions. Open source data provides the best information available to monitor these strikes, primarily from host nation officials, locals, and militants. Militants that have access to strike areas react quickly to take full advantage of the strike in the media. They quickly cordon off the scene to prevent anyone, even local from gaining access to the area. This limits accurate information on the number of civilians versus militants killed, which numbers are using exaggerated in favor of militants propaganda efforts. The lack of available data about the strikes are creating public blow back that governments must deal with.

In addition to resentment, drones are also facilitating terrorist recruitment. The perceived high level of civilian deaths allow jihadist to shape perceptions of American drones. Despite the internal logic of “signature strikes” and the relative precision of “personality strikes,” there can be no doubt that lethal drone operations have killed innocent victims enhancing already existing resentment.¹⁶⁹ Drone strikes constitute a strong source of outrage and a catalyst of recruitment among radicalized jihadists already living in the U.S. and overseas. Security experts believe that drone strikes have replaced the prison in Guantanamo Bay as the main recruitment instrument for young jihadists.¹⁷⁰

There are numerous examples of jihadists using American strikes for justification to conduct attacks. Unable to target the U.S., Pakistani jihadists target government and

¹⁶⁷ Al Jazeera, “Pakistan: State of the Nation,” *Al Jazeera-Gallup Pakistan Survey*, August 13, 2009, <http://www.aljazeera.com/focus/2009/08/2009888238994769.html#top>.

¹⁶⁸ Sloggett, “The Utility of Using UAVs,” 2010.

¹⁶⁹ Ibid.

¹⁷⁰ Ibid.

civilians on the basis that the government allows American attacks in the FATA. Additionally, both Tehrik-e-Taliban (TTP), or Pakistani Taliban, and AQ claim responsibility for the suicide bombing at the CIA base in Eastern Afghanistan in 2009 for retribution of drone strikes.¹⁷¹ In May 2010, after Faisal Shahzad attempted a car bombing in New York's Times Square, TTP claimed responsibility through a video statement stating it was revenge for the "recent rain of drone attacks in the tribal areas" and other perceived U.S. crimes.¹⁷² Additionally, in Yemen, AQAP uses similar arguments for attacks against the government and America. The attempted bombing of an airline over Detroit on December 25, 2009 was in retaliation for alleged drone strikes carried out by U.S. in Yemen on December 14, 2009.¹⁷³ These strikes will continue to pose a long-term threat to the U.S. due to lack of transparency on its strategy of lethal operations.

The risk of the U.S. creating more enemies from lethal operations is ongoing, but this threat may increase in the long-term when other SANSA begin to acquire offensive drones. With less stringent methods to limit drone strikes, SANSA will create even more enemies as they target adversaries in other nations. Tensions will increase within societies, as members feel threatened from the new technology and SANSA malign intentions and use of the systems. The offensive uses of drones will create fear and anger in many nations' societies.

After the reviewing the previously mentioned short-term benefits compared with the long-term consequences, this analysis concludes that American ethical and legal myopia is indeed threatening global security as operations outpaces policy. The U.S. administration remains myopically focused on the killing of terrorists that threaten national interests, yet fails to appreciate adequately the long-term ethical consequences associated with these operations. Whether killed or not, the threat to civilians remains as

¹⁷¹ Zahid Hussain, "Attacker of CIA is Linked to Taliban," *Wall Street Journal*, January 11, 2010, <http://online.wsj.com/article/SB126305287870523271.html>.

¹⁷² Aaron Katersky, "Faisal Shahzad Pleads Guilty in Time Square Car Bomb Plot, Warns of More Attacks," *World News*, June 21, 2010, <http://abcnews.go.com/Blotter/faisal-shahzad-pleads-guilty-times-square-car-bomb/story?id=10970094>.

¹⁷³ Sloggett, "The Utility of Using UAVs," 2010.

drones are far from perfect in their targeting, as the president actually acknowledged in his May 2013 speech.¹⁷⁴ If the U.S. does not codify the use of drones ethically, it may undermine the moral standings of the nation.¹⁷⁵ However, the concern is that by creating resentment and facilitating terrorist recruiting, drones do more harm in the long-term, even if they do some good in the short-term.

¹⁷⁴ Susan Brooks Thistlethwaite, "Drones in Yemen: Fear as Foreign Policy," *Washington Post* (blog), August 12, 2013, <http://www.washingtonpost.com/blogs/on-faith/wp/2013/08/12/drones-in-yemen-fear-as-foreign-policy/>.

¹⁷⁵ Singer, *Wired for War*, 309.

IV. RECOMMENDATIONS AND CONCLUSION

American strategic myopia is fostering a dangerous international precedent for future SANSA use of drones, as technology outpaces regulations and American operations outpaces policy. Myopic strategies are framing domestic and international legal precedents that fail to account for long-term consequences. This creates a future geopolitical environment that will see more aggression against adversaries armed with drones. The recent presidential policy guidance is a step forward to codify drone operations, but may be too late to change the international precedent already set by America.

A. RECOMMENDATIONS

First, The United States should develop a transparent national policy toward drones. This policy should create mechanisms to assess the lawfulness of lethal operations, account for any strikes considered unjust, and compensate victims and their families. U.S. and international law do not expressly forbid lethal operation, but American lack of clear drone policy brings this practice into question. American practices are not only providing SANSA with clear justification for their programs, but are also perpetuating blowback from civilian populations living under fear of drone strikes and their governments. Without a transparent policy, SANSA are apt to mirror American precedents when creating their programs.

The U.S. government should develop a transparent drone policy based on President Obama's speech given at NDU in May 2013. He made it clear, "the use of force must be seen as part of a larger discussion we need to have about a comprehensive counterterrorism strategy, because for all the focus on the use of force, force alone cannot make us safe. We cannot use force everywhere that a radical ideology takes root; and in the absence of a strategy that reduces the wellspring of extremism, a perpetual war."¹⁷⁶ There needs to be an expanded effort to explain how drones fit into the overall American counter-terrorism strategy, including what appropriate ethical justifications and legal

¹⁷⁶ White House, "Remarks by the President," 2013.

framework govern American lethal operations. Yet, force alone will not quell the threats of today; drone use must be part of a larger strategy and not seen as the only tool America possess to combat terrorism. Since the attacks of 9/11 and creation of the AUMF, global political and security concerns continue to evolve and so too should the requirement for lethal operations.

Second, the U.S. should create an external court, or court-like entity, that serves as a mechanism providing oversight on lethal drones operations. A “drone court” could review classified intelligence related to each drone strike and make a decision if the target meets an “imminent” threshold. Former Congresswoman Jane Harman has led the call for such a process, building upon the existing framework found in the FISA-courts system.¹⁷⁷ The court could follow specific criteria to determine if the threat is imminent, feasibility of capture, and consistency with international laws; similar to the current judiciary court and warrant system followed in the U.S. and now followed in warrant based targeting in Iraq and Afghanistan. Such a court adds a time consuming step in lethal operations process, but sets the international precedent for the need of checks and balances regarding lethal operations.¹⁷⁸ Alternatively, during time sensitive operations, agencies involved may maintain discretion for operational security, while afterward a drone court can conduct a review of the operation to enforce accountability amongst decision makers making wrong or unjust decisions. This sets an international precedent that the U.S. is not allowing a single individual to decide unilaterally who needs to die by drone.

Third, the U.S. should strengthen the MTCR and Wassenaar agreements. Diffusion of drones has become a threat to global security, as the feasibility of indigenous production increases and opportunities for acquiring complete unmanned systems emerge. The U.S. needs to improve export information databases and communications between licensing departments and intelligence agencies.¹⁷⁹ Despite attempts to limit drone diffusion, there remains no formal mechanism for government agencies to share

¹⁷⁷ Strawser, “No Easy Answer,” 2013.

¹⁷⁸ Ibid.

¹⁷⁹ U.S. Government Accounting Office, *Nonproliferation*, 28.

intelligence information that aid in export licensing decisions. The creation of an interagency export control group will provide necessary intelligence to all decision-makers, allowing exports license decision based on relevant and accurate intelligence. Additionally, the U.S. government does not have an aggregate export database that tracks drone exports.¹⁸⁰ Each agency's database categorizes drones differently, which impairs the U.S. governments' ability to conduct end-use monitoring. Partner nations and other SANSAs malign use of drones may go unchecked. Better sharing of intelligence will ensure that all administration officials understand the long-term consequences of drone diffusion.

These two agreements lack the international authority to enforce the limitations of drone exports by foreign nations. Thus far, both of these non-binding agreements are ineffective at limiting the diffusion of drones. The U.S. must work with the international community to strengthen both agreements. The MTCR conducts annual meetings and members must stop further attempts to relax the current controls that already exist.¹⁸¹ Rather, efforts must strengthen the MTCR with mechanisms to punish nations conducting exports of dual-use technologies or complete systems. Without mechanisms to punish violators, these agreements will remain non-binding and inconsequential to reducing diffusion. Fortunately, the drone threat has not completely matured yet, as SANSAs primarily only have limited tactical UAVs, giving the U.S. time to develop controls that will limit future exports of complete systems and dual-use technologies. The MTCR can become the United States' best hope to contain and manage the drone threat.

B. CONCLUSION

Drones are here to stay. Successful American use of unmanned systems is ushering in a new era of drone warfare, as SANSAs seek similar capabilities to combat perceived threats to their countries or networks. American lessening of export controls and lack of a transparent national drone policy is fostering dangerous international precedent. Although drones provide short-term benefits, tempering them through strict

¹⁸⁰ Ibid., 30.

¹⁸¹ Cole, "Mapping Drone Proliferation," 2012.

export controls, in coordination with ethical and legal policies, may help to ensure long-term consequences will not endanger future regional or global security. American myopic drone strategies are fostering a dangerous precedent for SANSAs to follow as they develop and deploy their own lethal drones.

Not all may be lost though. As the U.S. embarks on its comprehensive review of unmanned technology and looks to codify national policy, decision-makers may take into account the long-term consequences of these systems. The administration's codification of a clear drone policy can create standards and practices that are defensible domestically and internationally, especially as SANSAs develop unmanned programs. Only through open dialogue and transparent ethical discourse can administration officials create such a policy. Now is the time for American officials to develop a national drone policy to set conditions for future drone use. Without a transparent policy, the United States risks setting a dangerous precedent that SANSAs will use to justify their own drone programs.

LIST OF REFERENCES

- Al Jazeera. "Pakistan: State of the Nation." *Al Jazeera-Gallup Pakistan Survey*. August 13, 2009. <http://www.aljazeera.com/focus/2009/08/2009888238994769.html#top>.
- Anderson, Brain. "North Korea is testing a Fleet of Killer Drones." *Motherboard* (blog). March 20, 2013. <http://motherboard.vice.com/blog/north-korea-is-testing-a-fleet-of-killer-drones>.
- Ansari, Neha. "Drones Not A Violation of Our Sovereignty." *The International Herald Tribune*. July 23, 2013. <http://tribune.com.pk/story/580923/drones-not-a-violation-of-our-sovereignty/>.
- Ballolu, Brian. "Rezwan Ferdaus of Ashland 17 Years in Terror Plot." Boston. November 1, 2012. <http://www.boston.com/metrodesk/2012/11/01/rezwan-ferdaus-ashland-sentenced-years-terror-plot/KKvy6D6n2PfXfbEfA4iMwJ/story.html#sthash.oylCE2e8.dpuf>.
- Beckhausen, Robert. "Iranian Missile Engineer Oversees Chavez's Drones." *Wired*. Danger Room. June 18, 2012. <http://www.wired.com/dangerroom/2012/06/mystery-cargo/>.
- Benson, Pam. "Bin Laden documents: Fear of Drones." *CNN Security Clearance* (blog). May 3, 2012. <http://security.blogs.cnn.com/2012/05/03/bin-laden-documents-fear-of-drones/>.
- Bertorelli, Paul. "Drones: More Questions than Answers." *AVWEB* (blog). February 13, 2013. http://www.avweb.com/blogs/insider/AVwebInsider_DronesProliferate_208164-1.html.
- Bodeen, Christopher. "China Emerging as New Force in Drone Warfare." *Santa Cruz Sentinel*. May 3, 2013. http://www.santacruzsentinel.com/ci_23163525/china-emerging-new-force-drone-warfare?IADID=Search-www.santacruzsentinel.com-www.santacruzsentinel.com.
- Bureau of Investigative Journalism. *Covert Wars on Terror: The Data Sets*. Last modified August 1, 2013. Accessed September 3, 2013. <http://www.thebureauinvestigates.com/2013/01/03/obama-2013-pakistan-drone-strikes/>.
- Byman, Daniel. "Why Drones Work: The Case for Washington's Weapon of Choice." *Foreign Affairs*. July–August 2013. <http://www.foreignaffairs.com/articles/139453/daniel-byman/why-drones-work?cid=oth-cfr-callout-ja13-061813>.

- Carney, James. "Carney: Drone Strikes 'Legal,' 'Ethical,' 'Wise.'" *Washington Free Beacon*. February 5, 2013. <http://freebeacon.com/carney-drone-strikes-legal-ethical-wise/>.
- CBC News. "UN Embraces Drone Technology over Congo." Reuters. July 14, 2013. <http://www.cbc.ca/news/world/story/2013/07/14/wd-un-drones-congo.html>.
- Censer, Marjorie. "Pentagon Buying Official Forecasts Much Tougher 2014 for Defense Contractors." *Washington Post*, September 1, 2013. http://www.washingtonpost.com/business/capitalbusiness/pentagon-buying-official-forecasts-much-tougher-2014-for-defense-contractors/2013/08/30/a8ae5dce-0e6b-11e3-bdf6-e4fc677d94a1_story.html.
- Cole, Chris. "First British Drone Strike Carried Out from the UK RAF Waddington." *Drone Wars UK*. June 1, 2013. <http://dronewars.net/2013/05/01/first-british-drone-strike-carried-out-from-uk-raf-waddington/>.
- . "Industry lobbying to change drone export control rules." *Drone Wars UK*. November 11, 2011. <http://dronewars.net/2011/11/28/industry-lobbying-to-change-drone-export-control-rules/>.
- . "Mapping Drone Proliferation: Big Business vs. MTCR." *Drone Wars UK*. September 18, 2012. <http://dronewars.net/2012/09/18/mapping-drone-proliferation-big-business-vs-the-mtcr/>.
- Dareini, Ali Akbar. "Iran Drones Reached Israel by the Dozens." *Huffington Post*. October 16, 2012. http://www.huffingtonpost.com/2012/10/16/iran-drones-israel_n_1970868.html.
- Defense Science Board. *The Role of Autonomy in DoD Systems*. Washington, DC: Office of Under Secretary of Defense for Acquisition, Technology and Logistics, 2012. <http://www.acq.osd.mil/dsb/reports/AutonomyReport.pdf>.
- DeRouen, Karl Jr. and Alex Mintz. *Biases in Decision Making: Understanding Foreign Policy Decision Making*. New York: Cambridge University Press, 2010.
- Dowd, Alan W. "Drone Wars: Risk and Warnings." *Parameters, US Army War College Quarterly* 42, no. 1 (winter–spring 2013). http://www.strategicstudiesinstitute.army.mil/pubs/parameters/Issues/WinterSpring_2013/1_Article_Dowd.pdf.
- Drone Wars UK. *Drone Crash Database*. Last modified October 12, 2013. Accessed October 24, 2013. <http://dronewars.net/drone-crash-database/>.

- Easton, Ian M. and L. C. Russell Hsiao. "The Chinese People's Liberation Army's Unmanned Aerial Vehicle Project: Organizational Capacities and Operational Capabilities." Project 2049 Institute. March 11, 2013. http://project2049.net/documents/uav_easton_hsiao.pdf.
- Egozi, Arie. "Will the Real UAV Revolution Begin in Poland." *Israeli Defense*. August 27, 2012. <http://www.israeldefense.com/?CategoryID=472&ArticleID=1605>.
- Franceschi-Bicchierai, Lorenzo. "GPS Hijacking Catches Feds, Drone Makers off Guard." *Wired*. July 19, 2012. <http://www.wired.com/dangerroom/2012/07/drone-gps-spoof/>.
- Friedersdorf, Conor. "CNN's Bogus Drone-Deaths Graph." *The Atlantic*. July 6, 2012. <http://www.theatlantic.com/politics/archive/2012/07/cnns-bogus-drone-deaths-graphic/259493/>.
- Gallo, William. "Chinese Drone Technology Advancing Rapidly." *Voice of America*. December 19, 2012. <http://www.voanews.com/content/analysts-chinese-drone-technology-advancing-rapidly/1567739.html>.
- Gaylord, Chris. "SkyGrabber: Is Hacking Military Drones too Easy?" *Christian Science Monitor*. December 17, 2009. <http://www.csmonitor.com/Innovation/Horizons/2009/1217/SkyGrabber-Is-hacking-military-drones-too-easy>.
- Gertler, Jeremiah. *U.S. Unmanned Aerial System*. CRS RL42136. Washington, DC: Congressional Research Service, 2012.
- Ghazi, Siavosh. "Iran Unveils New Attack Drone." *Yahoo News*. May 9, 2013. <http://uk.news.yahoo.com/iran-unveils-attack-drone-190842909.html#s9lMmDx>.
- Goldenberg, Tia. "Israel Leads Global Drone Exports as Demand Grows." *The Times of Israel*. July 21, 2013. <http://www.timesofisrael.com/israel-leads-global-drone-exports-as-demand-grows/>.
- Goodman, Marc. "Attack of the Drones: The Dangers of Remote-Controlled Aircraft." *Jane's Intelligence Review*. December 16, 2011. <https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1196343&Pubabbrev=JIR>.
- Hallgrath, Matthew W. "Just War Theory and Remote Military Technology: A Primer," in *Killing by Remote Control*, edited by Bradley J. Strawser, 25–46. New York: Oxford University Press, 2013.

- Holewinski, Sarah. *Civilian Impact of Drones: Unexamined Cost, Unanswered Questions*. New York: Center for Civilians in Conflict and Human Rights Clinic, Columbia Law School, 2012.
<http://web.law.columbia.edu/sites/default/files/microsites/human-rights-institute/files/The%20Civilian%20Impact%20of%20Drones.pdf>.
- Holmes, Matthew B. "Just War and Applicability to Targeted Killing." Master's thesis, Army Command and General Staff College, 2010.
- Humphreys, Todd. "Cockrell School Researchers Demonstrate First Successful 'Spoofing' of Drones." University of Texas, Austin. June 27, 2012.
<http://www.engr.utexas.edu/features/humphreysspoofing>.
- Hussain, Zahid. "Attacker of CIA is linked to Taliban." *Wall Street Journal*. January 11, 2010. <http://online.wsj.com/article/SB126305287870523271.html>.
- Ingersoll, Gregory. "Check out This Drone-Proof Counter Surveillance Clothing." *Business Insider*. January 9, 2013. <http://www.businessinsider.com/check-out-this-drone-proof-counter-surveillance-clothing-2013-1>.
- Isikoff, Michael. "Justice Department Memo: It's Legal to Use Drone Strikes against Americans." *MSNBC*. February 4, 2013.
<http://tv.msnbc.com/2013/02/04/exclusive-justice-department-memo-reveals-legal-case-for-drone-strikes-on-americans/>.
- Jakes, Lara. "Obama to address Drones, Gitmo in Security Speech." Associated Press. May 22, 2013. <http://news.yahoo.com/obama-address-drones-gitmo-security-speech-102600910.html>.
- Katersky, Aaron. "Faisal Shahzad Pleads Guilty in Time Square Car Bomb Plot, Warns of More Attacks." *World News*. June 21, 2010.
<http://abcnews.go.com/Blotter/faisal-shahzad-pleads-guilty-times-square-car-bomb/story?id=10970094>.
- Lennard, Natasha. "Iran High Schools to Teach Drone Hacking." *Salon*. August 19, 2013.
http://www.salon.com/2013/08/19/iran_high_schools_to_teach_drone_hacking/.
- Levitt, Theodore. "Marketing Myopia." *Harvard Business Review* 38 (July–August 1960): 57–56.
- Lewis, Michael W. "Drones: Actually the Most Humane Form of Warfare Ever." *The Atlantic*. August 21, 2013.
<http://www.theatlantic.com/international/archive/2013/08/drones-actually-the-most-humane-form-of-warfare-ever/278746/>.

- MacAskill, Ewen. "Iran Claims to Have Reversed-Engineered US Spy Drone." *The Guardian*. April 22, 2012. <http://www.theguardian.com/world/2012/apr/22/iran-reverse-engineer-spy-drone>.
- McConnell, Dugald and Brian Todd. "Militant Tipsheet: How to Avoid a Drone Strike." *CNN*. February 23, 2013. http://www.cnn.com/2013/02/22/world/meast/drone-dodging/index.html?hpt=hp_t2.
- Melito, Thomas. *Nonproliferation: Agencies Could Improve Information and End-Use Monitoring on Unmanned Aerial Vehicle Exports*. GAO-12-536, 2012. <http://www.gao.gov/products/GAO-12-536>.
- Meyer, John. "How Israel Became the Worldwide Leader in Drones." *The Atlantic Wire*. July 10, 2013. <http://www.theatlanticwire.com/global/2013/07/how-israel-became-worldwide-leader-drones/67050/>.
- Michaels, Jim. "Experts: Drones Basis for New Global Arms Race." *USA Today*. January 9, 2013. <http://www.usatoday.com/story/news/world/2013/01/08/experts-UAS-basis-for-new-global-arms-race/1819091/>.
- Missile Technology Control Regime. "Frequently Asked Questions." Accessed August 13, 2013. <http://www.mtcr.info/english/FAQ-E.html>.
- National Museum of the U.S. Air Force. "Kettering Aerial Torpedo 'Bug.'" March 21, 2007. <http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=320>.
- New America Foundation. *Pakistani Drone Analysis*. Last modified July 31, 2013. Accessed August 31, 2013, <http://natsec.newamerica.net/drones/pakistan/analysis>.
- NOVA. "AQM-34 Ryan Firebee." Public Broadcasting System. Accessed June 6, 2013. http://www.pbs.org/wgbh/nova/spiesfly/uavs_09.html.
- O'Connell, Mary. "International Law of Drones." *The American Society of International Law* 14, no. 38 (2010): 1–6.
- Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer. *Program Acquisition Costs by Weapon System*. Washington, DC: Department of Defense, 2011. http://comptroller.defense.gov/defbudget/fy2012/FY2012_Weapons.pdf.
- Pravda News*. "Pakistan Destroys Major al-Qaida Hide-out in Military Operation near Afghanistan." *Pravda Hotspots and Incidents*. September 13, 2005. <http://english.pravda.ru/news/hotspots/13-09-2005/65825-0/>.
- Pearse, Damien. "Afghan Civilian Death Toll Reaches Record High." *The Guardian*. February 4, 2012. <http://www.theguardian.com/world/2012/feb/04/afghan-civilian-death-toll-record>.

- Perlez, Jane. "Chinese Plan to Kill Drug Lord with Drone Highlights Military Advances." *New York Times*. February 21, 2013.
<http://www.nytimes.com/2013/02/21/world/asia/chinese-plan-to-use-drone-highlights-military-advances.html>.
- Plaw, Avery. "Counting the Dead: The Proportionality of Predation in Pakistan." In *Killing by Remote Control: The Ethics of Unmanned Military*, edited by Bradley Jay Strawser, 126–153. New York: Oxford University Press, 2013.
- Rawnsley, Adam. "Iran Shows off Captured U.S. Drone, Swears it's No Fake." *Wired*. December 8, 2011. <http://www.wired.com/dangerroom/2011/12/iran-drone-video/>.
- Roberts, Dan. "Obama Restricts Drone Killing and Foresees End to Perpetual War." *The Guardian*. May 23, 2013.
<http://www.theguardian.com/world/2013/may/23/obama-drone-policy-counter-terrorism>.
- Roberts, Kristin. "When the Whole World Has Drones: The Precedents the U.S. has Set for Robotic Warfare May Have Fearsome Consequences as other Countries Catch Up." *National Journal*. March 22, 2013.
<http://www.nationaljournal.com/magazine/when-the-whole-world-has-drones-20130321>.
- Rogers, Everett M. *Diffusion of Innovations*. New York: Free Press, 1995.
- Rogio, Bill and Alexander Mayer. "Charting the Data for US Airstrikes in Pakistan, 2004-2013." *Long War Journal*. Last modified August 31, 2013. Accessed September 03, 2013. <http://www.longwarjournal.org/pakistan-strikes.php>.
- Saletan, William. "Drones are the Worst Form of War, Except for All the Others." *San Jose Mercury News*. February 21, 2013.
http://www.mercurynews.com/ci_22628998/drones-save-civilians-bombs-more-deadly?IADID=Search-www.mercurynews.com-www.mercurynews.com.
- Schenker, David. "How the Israeli Drone Strikes in the Sinai Might Backfire." *The Atlantic*. August 13, 2013. <http://www.washingtoninstitute.org/policy-analysis/view/how-the-israeli-drone-strike-in-the-sinai-might-backfire>.
- Schmitt, Eric. "Drones in Niger Reflect New U.S. Tack on Terrorism." *New York Times*. July 10, 2013. http://www.nytimes.com/2013/07/11/world/africa/drones-in-niger-reflect-new-us-approach-in-terror-fight.html?pagewanted=all&_r=0.
- and Savare, Scott. "U.S. Opens Drone Base in Niger, Building Africa Presence." *New York Times*. February 23, 2013.
http://www.nytimes.com/2013/02/23/world/africa/in-niger-us-troops-set-up-drone-base.html?pagewanted=all&_r=0.

- Shala-Esa, Andrea. "U.S. Industry Touts Drone Promise as Public Debate Flares." Reuters. May 21, 2013. <http://news.yahoo.com/u-industry-touts-drone-promise-public-debate-flares-020214387.html>.
- Shane, Scott. "Election Spurred a Move to Codify U.S. Drone Policy." *The New York Times*. November 24, 2012. http://www.nytimes.com/2012/11/25/world/white-house-presses-for-drone-rule-book.html?nl=todaysheadlines&emc=edit_th_20121125&_r=1&_.
- . "Coming Soon: The Drone Arms Race." *The New York Times*. October 8, 2011. http://www.nytimes.com/2011/10/09/sunday-review/coming-soon-the-drone-arms-race.html?pagewanted=all&_r=0.
- . "Judge Challenges White House Claims on Authority of Drone Killings." *New York Times*. July 19, 2013. <http://www.nytimes.com/2013/07/20/us/politics/judge-challenges-white-house-claims-on-authority-in-drone-killings.html?src=recg>.
- Singer, Peter. "Finally, Obama Breaks His Silence on Drones." Brookings Institute. May 23, 2013. <http://www.brookings.edu/research/opinions/2013/05/23-drones-obama-singer>.
- . *Wired for War: The Robotics Revolution and Conflict in the Twenty-First Century*. New York: The Penguin Press, 2009.
- and Thomas Wright. *An Obama Doctrine on New Rules of War*. Washington DC: Brookings Institute, 2013.
- Shalizi, Hamid. "End Night Raids before Afghan Deal: Karzai." Reuters. November 16, 2011. <http://www.reuters.com/article/2011/11/16/us-afghanistan-jirga-idUSTRE7AF1Y920111116>.
- Shapiro, Walter. "Drone of Silence: The National Security Policy that Obama and Romney Wont Debate." *Yahoo News*. October 26, 2012. <http://news.yahoo.com/drone-of-silence-the-national-security-policy-that-obama-and-romney-wont-debate-10251296.html>.
- Sloggett, Dave. "The Utility of Using UAVs in Fighting Terrorism." *Jane's Intelligence Review*. July 10, 2013. <https://janes.ihs.com/CustomPages/Janes/DisplayPage.aspx?DocType=News&ItemId=+++1196017&Pubabbrev=JIR>.
- Stewart, Jon. "Barack Obama Extended Interview." *The Daily Show*. October 18, 2012. <http://www.thedailyshow.com/watch/wed-october-27-2010/barack-obama-pt--1>.
- Strawser, Bradley Jay. "Moral Predators: The Duty to Employ Uninhabited Aerial Vehicles." *Journal of Military Ethics* 9, no. 4 (2010): 342–368.

- Strawser, Bradley Jay. "More Heat than Light: The Vexing Complexities of the Drone Debate." *3 Quarks Daily*. February 25, 2013.
<http://www.3quarksdaily.com/3quarksdaily/2013/02/more-heat-than-light-the-vexing-complexities-of-the-drone-debate.html>.
- Strawser, Bradley Jay. *Killing by Remote Control: The Ethics of an Unmanned Military*. New York: Oxford Printing Press, 2013.
- Taj, Farhat. "Drone Attacks." *Daily Times*. January 2, 2012.
http://www.dailytimes.com.pk/default.asp?page=2010%5C01%5C02%5Cstory_2-1-2010_pg3_5.
- Thistlethwaite, Susan Brooks. "Drones in Yemen: Fear as Foreign Policy." *Washington Post* (blog). August 12, 2013. <http://www.washingtonpost.com/blogs/on-faith/wp/2013/08/12/drones-in-yemen-fear-as-foreign-policy/>.
- Teal Group Inc. "Unmanned Aerial Vehicles Market Overview." *World Missiles Briefing*. Fairfax, VA: Teal Group Inc., 2011.
- Terkel, Amanda. "Lindsey Graham: Drone Strikes Have Killed 4,700 People." *Huffington Post*. February 21, 2013.
http://www.huffingtonpost.com/2013/02/21/lindsey-graham-drone-strikes_n_2734133.html.
- Torbati, Yeganeh. "Iran Has Advanced Drone Technology." Reuters. October 28, 2012.
<http://ebird.osd.mil/ebfiles/e20121029909777.html>.
- University of Massachusetts Dartmouth Research Project. "UMASS Drone." Last modified August 31, 2013. Accessed September 2, 2013.
<http://umassdrone.org/index>.
- U.S. Army UAS Center of Excellence (CoE). "The Eyes of the Army, Unmanned Aircraft Systems Roadmap 2010–2035." Federation of American Scientists. Accessed May 20, 2013. <http://www.fas.org/irp/program/collect/drone-army.pdf>.
- U.S. Department of Defense. *DoD Dictionary of Military and Associated Terms* (Joint Publication 1-02). Washington DC: U.S. Department of Defense, 2007.
- U.S. Department of Justice, "Lawfulness of a Lethal Directed Against A U.S. Citizen Who Is a Senior Operational Leader of Al-Qaeda or An Associated Force," *Global Security*, last modified November 8, 2011, accessed February 4, 2013,
<http://www.globalsecurity.org/security/library/policy/national/doj-wp-imminent-threat.htm>.
- Volker, Kurt. "The Risk of Relying on Drones." *Washington Post*. October 28, 2012.
<http://ebird.osd.mil/ebfiles/e20121028909732.html>.

- Walzer, Michael. *Just and Unjust Wars: A Moral Argument with Historical Illustrations*. New York: Basic Books, 2006.
- Wassenaar Arrangement. "Export Controls for Conventional Arms and Dual-Use Goods and Technology." August 13, 2013.
<http://www.wassenaar.org/guidelines/index.html>.
- White House. "Remarks by the President at the National Defense University." News release. May 23, 2013. <http://www.whitehouse.gov/the-press-office/2013/05/23/remarks-president-national-defense-university>.
- Whitlock, Craig. "Remote U.S. Base at Core of Secret Operations." *The Washington Post*. October 25, 2012. http://www.washingtonpost.com/world/national-security/remote-us-base-at-core-of-secret-operations/2012/10/25/a26a9392-197a-11e2-bd10-5ff056538b7c_print.html.
- . "U.S. Shifts Drones to New Frontiers." *Washington Post*. July 21, 2013.
http://www.washingtonpost.com/world/national-security/us-military-drone-surveillance-is-expanding-to-hot-spots-beyond-declared-combat-zones/2013/07/20/0a57fbda-ef1c-11e2-8163-2c7021381a75_story.html?hpid=z1.
- Wood, David. "American Drones Ignite New Arms Race from Gaza to Iran to China." *Huffington Post*. November 27, 2012.
http://www.huffingtonpost.com/2012/11/27/american-drones_n_2199193.html.
- Zakaria, Tabassum. "As Drone Monopoly Frays, Obama Seeks Global Rule." Reuters. March 17, 2013. <http://www.reuters.com/article/2013/03/17/us-usa-security-drones-idUSBRE92G02720130317>.
- Zapfe, Martin and Perm Mahadevan. "Descending Drones." July 2013. Center for Security Studies. <http://www.css.ethz.ch/publications/pdfs/CSS-Analysis-137-EN.pdf>.
- Zenko, Micah. "Reforming U.S. Drone Strike Policies." Last modified January 2013. Council of Foreign Relations. <http://www.cfr.org/wars-and-warfare/reforming-us-drone-strike-policies/p29736>.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
Ft. Belvoir, Virginia
2. Dudley Knox Library
Naval Postgraduate School
Monterey, California