

“THE MICROSCOPIC THREAT TO THE UNITED STATES: BIOLOGICAL  
WEAPONS, BIOLOGICAL TERRORISM, AND THEIR MULTIFACETED  
IMPLICATIONS FOR U.S. SECURITY”

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## **ABSTRACT**

From 1943 to 1969 the United States had a thriving biological weapons program to develop new ways of targeting its adversaries. With the 1972 creation of the Biological Weapons Convention, the United States relinquished its program and sought to prevent other countries from possessing these lethal weapons. While previously the United States mainly worked with other states and the international community to minimize the threat from biological weapons, the 2001 anthrax attacks changed this landscape by adding a domestic dimension. This thesis explores three major aspects of the biological threat to the United States: domestic lone wolf actors, possible future state threats, and the failing aspects of the Biological Weapons Convention. An analysis of each aspect of the biological threat is performed to identify the role they each may play in future U.S. security decisions. Among the multitude of threats that can arise from biological terrorism and weapons, these particular threats are the most likely to shape future U.S. decision making, both domestically and at the international level. Through an analysis of a specific aspect of the biological threat towards the United States, each chapter illustrates the biological threat to the United States is real, menacing, and must be addressed for the future of U.S. security. Due to continuous changes in technology, domestic terrorism threats, and state-to-state relationships, this thesis highlights the need to acknowledge the importance of the biological threat in order to mitigate the rise of a threat that has tremendous implications for U.S. security and the survival of the U.S. population as a whole.

Thesis Advisors: Drs. Rameez Abbas and Alexander Rosenthal

## **PREFACE**

This thesis is a result of all three years of my studies at Johns Hopkins University in the Global Security Studies Masters program from 2011 to 2014. What started as an interest in al Qaeda and their aims to create biological weapons turned into a piece of research aimed to protect and prepare the United States from this danger, viewed from many different angles. I picked a topic that is not mainstream and with that, I sought, and continue to seek, knowledge from a variety of mentors in order to produce this thesis.

First, I would like to thank Dr. Rameez Abbas for challenging me to make my topic relevant for every type of reader and providing an enormous amount of constructive feedback.

Second, I would like to thank Dr. Gregory Koblenz of George Mason University for taking the time to guide a student who knew absolutely nothing about biological weapons and biological terrorism. His expert guidance on potential topics helped shape the entirety of my thesis.

Third, I would also like to thank Charles Blair for providing the basic scientific background I needed to truly understand this topic and the push I needed to take a chance on quantitative analysis.

Lastly, I would like to thank my family for their love, support, and encouraging words during this process. My parents were there to listen to my trials and tribulations while always reminding me of how proud they are of what I have achieved. Most importantly, I have to thank my husband Adam for pushing me to take on a topic less traveled, listening to me panic about every thesis due date, and for spending endless hours helping me make my data easier to digest.

## TABLE OF CONTENTS

Abstract.....	ii
Preface.....	iii
Table of Contents.....	iv
Introduction.....	1
Chapter 1: A New Face of Bioterrorism: Leaderless Resistance and its Effects on U.S. Policy.....	5
U.S. Bioterrorism Strategy Before Leaderless Resistance.....	6
The Leaderless Resistance Movement.....	10
Leaderless Resistance and Bioterrorism.....	13
U.S. Bioterrorism Strategy After Leaderless Resistance Trend Began....	14
Similarities Between Old and New U.S. Bioterrorism Strategies.....	16
Policy Implications Concerning Leaderless Resistance.....	17
Research Capabilities.....	17
Role of Law Enforcement.....	18
Data Sharing.....	19
Role of International Actors.....	19
Hypothesis Concerning LR and U.S. Bioterrorism Strategy.....	20
Bioterrorism Case Studies.....	20
Case Studies Before the Rise of Leaderless Resistance.....	21
Research Capabilities pre-Leaderless Resistance.....	21
The Role of Law Enforcement pre-LR.....	24
Data Sharing pre-Leaderless Resistance.....	26

The Role of International Actors pre-LR.....	27
Case Studies During Rise of Leaderless Resistance.....	27
Research Capabilities During LR Trend.....	28
The Role of Law Enforcement During LR Trend.....	28
Data Sharing During Leaderless Resistance Trend.....	30
The Role of International Actors During LR Trend.....	32
Conclusion.....	32
Chapter 1 Bibliography.....	34
Chapter 2: A Quantitative Approach to Predicting State Bioweapons Threats.....	40
Methodology.....	41
Population Selection.....	42
Limitations/Delimitations for Datasets.....	43
Benign and Threatening State Features Analyzed.....	44
Type of Government.....	45
Gross Domestic Product.....	45
Freedom of the Press Rating.....	46
Religion Percentage.....	46
Political Terror Rating.....	47
Arms Transfers Received.....	48
Infant Mortality Rate.....	48
Science and Technical Journal Articles.....	49
Understanding Historical State BW Programs.....	49
The Soviet (Russian) BW Program.....	50

The Iraqi BW Program.....	52
The South African BW Program.....	52
Features of Historical State BW Programs.....	53
Identification of Possible Future Threats Using Historical Features.....	59
Conclusion.....	67
Chapter 2 Bibliography.....	69
Chapter 3: Motivations Behind the U.S. VEREX Rejection and What the Future Holds for the Biological Weapons Threat on a Global Scale.....	72
Background of the Biological Weapons Convention.....	74
History of the Biological Weapons Convention.....	74
The Dual-use Issue.....	76
The Verification Protocol and the U.S. Refusal.....	79
The U.S. History of International Arms Agreements.....	81
Case Studies of Other Large BWC States.....	83
Russia and the Soviet Union.....	84
China.....	88
The Influence of Russia and China over U.S. Rejection of VEREX....	90
The Renewed Argument for the Verification Protocol.....	91
Alternatives to Verification Protocol for the Future.....	93
Global Scientific Community Outreach.....	93
Adapting to Advances in Biotechnology.....	95
Creation of National Standards.....	96
Conclusion.....	97

Chapter 3 Bibliography.....	99
Conclusion.....	102
Curriculum Vitae.....	106

## INTRODUCTION

Biological agents aren't as widely discussed as some of their other Chemical, Biological, Radiological, and Nuclear (CBRN) counterparts, but they have the capability to silently kill millions before those individuals even know they have come in contact with a lethal substance. Efforts to curtail the threat of biological weapons (BW) remained focused on the international level from the creation of the U.S. biowarfare program in 1943 until the 2001 lone wolf anthrax attacks, which occurred one week after the September 11<sup>th</sup> terror attacks. This paper explores three major aspects of this biological threat to the United States: domestic lone wolf actors, possible future state threats, and the failing aspects of the Biological Weapons Convention (BWC). The central theme of this thesis is that a multifaceted approach to dealing with the biological threat to the United States is of the utmost importance given the variety of biological threats present today.

As the biological threat morphs over the years and scientific advances continue, an understanding of the primary biological threats to the United States is paramount to U.S. security-but this understanding is a moving target. In order for U.S. policy makers to prevent a biological attack on U.S. soil and U.S. interests, they must acknowledge these threats and work to shift U.S. policy in a proactive rather than a reactive direction. Research on the biological threat to the United States is present in academic and security-related publications, but few take the extra steps to analyze the issue at several different levels. An analysis of different levels of the biological threat is performed within this paper to identify the role they each may play in future U.S. security decisions.



The first chapter asks how the leaderless resistance movement has shaped U.S. bioterrorism policy. Leaderless resistance is referred to in academic literature as an individual or small group, detached from any central network, engaging in “anti-state” violence. Warnings from U.S. law enforcement and security professionals have highlighted the shift in extremist attacks from a centrally-directed to a more detached “leaderless resistance” approach. Understanding of the correlation between these disturbing domestic trends from a bioterrorism perspective in light of existing U.S. bioterrorism policy is necessary to understand the cause and effect relationship that can have implications for years to come. The first chapter analyzes the major implications of the bioterrorism policies of the Bush and Obama administrations. Historically, the Bush administration took the stance that a biological attack would occur and sought to lessen the effects of such an event emphasizing an area termed “biodefense”. The Obama administration policy sought to prevent an attack from occurring utilizing proactive measures, placing more importance on an area termed “biosecurity”. The chapter uses the lens of the shift in policies between the two administrations to discuss the rise of leaderless resistance terrorist activity, showing a relationship between the years the trend began and the change in administrations.

Each of the administrations’ bioterrorism policies are then analyzed in terms of research capabilities, role of law enforcement, data sharing, and the role of international actors to identify whether the leaderless resistance trend shaped policy decisions. Case studies of bioterrorism incidents in the United States produced over the course of both administrations are also analyzed to provide examples of changing attitudes and beliefs regarding bioterrorism. Overall, the leaderless resistance trend had some effects on U.S.

bioterrorism policy but it appears that ideological differences between the two administrations played a much larger role in the changes to bioterrorism policy from 2003 to 2014.

The second chapter asks how known features of state-sponsored BW programs can help produce a framework for predicting possible future threats to the United States. The real and looming biological agent threat has been continuously overlooked at the state level even as states cross “red lines” of international norms concerning weapons. The chapter takes a look at historical BW programs established after the United States relinquished its BW and joined the BWC. These historical states are referred to as “rogue” to explain their role as contention states within a U.S. led world order, at least at the time of their BW development. These states include Russia (USSR), South Africa, and Iraq. These states are used as historical examples through which the chapter identifies patterns in potentially future rogue state BW behavior. Various aspects of these states, both benign and threatening, such as Gross Domestic Product, Freedom of the Press rating, Political Terror rating, and infant mortality rates are analyzed and the outcomes are recorded. The outcomes, or patterns, are tested against a list of possible present-day threat states: non-signatory states to the BWC, non-ratifying states to the BWC, and Director of National Intelligence (DNI) WMD threat states. With the use of the historical state patterns, a short list of possible future state threats emerge, to include China, Egypt, Israel, and Myanmar. After the quantitative analysis was performed, potential future state threats were revealed to share several common characteristics: lower levels of democracy, lower press freedom ratings, high political terror ratings, and moderate levels of received arms transfers. All in all, without follow-up reports that these countries do in

fact have BW programs, it is impossible to tell if the methodology was successful but this quantitative approach provides a blueprint for future threat-based analysis concerning state BW, a topic that has been sorely overlooked in academic literature.

The third and final chapter asks why the United States has refused to sign onto the verification protocol of the BWC considering its track record with signing international arms agreements and its push for the protocol pre-2001. The core failure of the verification protocol (VEREX) for the BWC continues to be a major obstacle to dealing with the threat of bioterrorism and BW at an international level. Greater attention must be paid to the motivations for the U.S. refusal as well as credible options for the future. The history of the BWC and VEREX are detailed for the reader, including the dual-use issue of scientific endeavors such as biodefense programs. The publicized reasons behind the U.S. refusal of the protocol are discussed at length, as is the U.S. history concerning the signing of international arms agreements. Case studies of China and Russia, who have also cast doubt on the protocol, are used to attempt to unveil additional motivations for a U.S. refusal to sign. Overall, the refusal of VEREX is directly tied to the statements and actions of other BWC participating states like Russia and China, overriding the desire for an international partnership and previous arms agreement patterns. In lieu of VEREX, the United States has a variety of policy options to choose from, with domestic based programs being the strongest contenders to battle this issue.

Overall, the biological threat to the United States is one that must be looked at through several lenses to truly understand its complexity. This thesis aims to provide clarity and to encourage academic as well as policy discussion about a “non-traditional” threat to the United States and ways that it can be combated.

## **Chapter 1: A New Face of Bioterrorism: Leaderless Resistance and its Effects on U.S. Policy**

Immediately after the 9/11 attacks, Americans feared that the U.S. would be attacked again on a larger scale. The anthrax attacks, which occurred only days after the 9/11 attacks, appeared to verify that fear and set the American public further on edge. This bioterrorism attack was the most complex Americans had ever seen and the country was extremely unprepared. U.S. policy on bioterrorism began to shift after the anthrax attacks, but momentum was lost as the country dealt with wars in Afghanistan and Iraq, as well as the failing domestic economy. During this time, major changes to the terrorism landscape on a global scale began to take place and the threat started to reemerge.

One of the major changes that occurred within the terrorism environment was the shift of al Qaeda from a structured organization to a more fragmented one. Since 2011 al Qaeda has suffered extreme blows to their structure and operations. The loss of Osama bin Laden and drone strikes in Yemen and Pakistan have severely affected their mission to attack the United States on a larger scale. Terrorist groups such as al Qaeda-affiliate al Qaeda in the Arabian Peninsula (AQAP) have been using publications since 2010 to influence those not affiliated with the organization to carry out jihad by themselves. This method of radicalization gave rise to multiple domestic attacks by individuals or small groups, seemingly unaffiliated with a larger organization. This leaderless resistance movement is on the rise with warnings coming in throughout the U.S. law enforcement community. Due to the fact that a bioterrorism attack has been viewed by many in leadership positions within the government as something that will occur again, the

leaderless resistance trend may have had an increased impact on the U.S. bioterrorism strategy as U.S. law enforcement attempts to deal with this major change.<sup>1</sup>

This chapter investigates how the leaderless resistance movement has shaped U.S. bioterrorism policy. The past policies concerning the U.S. bioterrorism strategy will be discussed in terms of the stance taken by the Bush administration. This prior policy will be compared and contrasted with the new policies of the Obama administration. An analysis of the leaderless resistance trend, coupled with changes in the bioterrorism policy, reveals a partial correlation between the two administrations. The depth of this relationship will be investigated through a literature review of the leaderless resistance movement and changes in the U.S. bioterrorism strategy. The different strategies will also be analyzed within the scope of research capabilities, role of law enforcement, data sharing, and the role of international actors. A case study of U.S. bioterrorism incidents bridging through both administrations will also be conducted to analyze the relationship and the scope of changes that took place. Overall, while the leaderless resistance movement has caused some changes to U.S. bioterrorism policies, the changes in Presidential administrations - and the accompanying political priority shifts - have played a much larger role.

### **U.S. Bioterrorism Strategy Before Leaderless Resistance Trend Began**

The U.S. bioterrorism strategy before the anthrax attacks in 2001 was severely limited in terms of overall capabilities and efforts to detect and prevent a bioterrorism attack. Limited surveillance measures existed as well as a very small number of prepared hospitals and medical centers ready to respond to biological weapons (BW) attacks. Until

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<sup>1</sup> U.S. Congressional Research Service, Federal Efforts to Address the Threat of Bioterrorism: Selected Issues for Congress (R41123; Aug. 6, 2010), by Frank Gottron and Dana A. Shea.

the anthrax attacks, no system was in place to distribute the necessary vaccines or medical treatments for victims of an attack and first responders.<sup>2</sup> In 2004, the Bush administration developed a bioterrorism strategy aimed at preparedness after the anthrax attacks. In this policy, Bush stated that medical and public health programs had been revitalized and expanded. A stockpile of smallpox vaccines was also included in the improved medical programs.<sup>3</sup> This stockpiling effort has been praised by some as a success story in the fight to protect U.S. citizens, but there are concerns that stockpiles such as these have lost “importance” in the eyes of new policy makers.<sup>4</sup> A greater importance was also placed on developing biosurveillance programs such as Bioshield and Biosense to detect “early indicators of a biological attack.”<sup>5</sup>

The Department of Homeland Security was tasked with coordination of the various pillars of the Bush strategy, in conjunction with the Department of State.<sup>6</sup> Bush also placed a higher importance on preplanning by different government agencies to coordinate emergency protocols. Within this preplanning sector he spoke of “working to improve the survivability and ensure the continuity and restoration of operations.”<sup>7</sup> The Bush administration placed greater importance on the fact that a BW attack would occur, unlike his predecessors who placed more importance on threats from traditional methods

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<sup>2</sup> Crystal Franco and Mary B. Hansen, “The State of Biopreparedness: Lessons from Leaders, Proposals for Progress,” *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 8, no. 4 (2010): 380.

<sup>3</sup> George W. Bush, *Biodefense for the 21st Century*, (Washington, DC: White House, 2004), 2.

<sup>4</sup> James Glassman, “We’re Letting Our Bioterrorism Defenses Down,” *Forbes*, <http://www.forbes.com/sites/jamesglassman/2012/04/04/were-letting-our-bioterrorism-defenses-down/> (accessed April 28, 2014).

<sup>5</sup> Anne L. Clunan, “Building Information Networks for Biosecurity,” in *Terrorism, War, or Disease?*, eds. Anne L. Clunan, Peter R. Lavoy, and Susan B. Martin (Stanford: Stanford Security Studies, 2008), 296.

<sup>6</sup> *Biodefense: Next Steps, Senate Hearing* (February 8, 2005) (statement of Dr. Penrose C. Albright, Department of Homeland Security, Assistant Under Secretary for Science and Technology).

<sup>7</sup> Bush, *Biodefense for the 21st Century*, 5.

of warfare. The terrorist attacks of 9/11 and the anthrax attacks gave way to a response tactic known as biodefense by the Bush administration.

After seeing the long, drawn out case of the anthrax attacks the Bush administration looked to develop the bioforensic capabilities of the United States. These capabilities would enable scientists and law enforcement to determine the source of a specific pathogen in order to respond adequately.<sup>8</sup> This type of investigative technique is what lead law enforcement, after years of research, to Bruce Ivans as the anthrax attacker. The anthrax attacks also revealed the loose regulations and protocol for decontamination after a BW event. Millions of dollars were spent and multiple offices were shut down to remove anthrax spores from the premises. The Bush administration stated that the Environmental Protection Agency (EPA) would be placed in charge of developing the decontamination procedures to allow agencies to return to regular operations as soon as possible.<sup>9</sup> New labs were also ordered to be built to develop adequate vaccines and countermeasures to quickly respond to an attack. These labs were developed to “evaluate existing, proposed, or promising countermeasures” to a BW attack.<sup>10</sup> This defensive strategy, some scholars argue, lead to an even greater availability of BW in labs. The Bush administration did not include “provisions for addressing the problem of what happens when a ‘good’ researcher goes ‘bad’.”<sup>11</sup> A massive expansion of BW researchers wasn’t the only issue with the Bush administration policy. In addition to the aforementioned problems, the administration also failed to place significant importance on the international community to prevent a bioterrorism or BW attack.

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<sup>8</sup> Ibid., 6.

<sup>9</sup> Ibid., 8.

<sup>10</sup> Ibid.

<sup>11</sup> Gregory D. Koblenz, “From Biodefense to Biosecurity: the Obama Administration’s Strategy for Countering Biological Threats,” *International Affairs* 88, no, I (2012): 142.

Gregory Koblentz, Deputy Director of the Biodefense program at George Mason University, argues that the Bush administration bioterrorism strategy almost exclusively discussed domestic preparedness and response, while ignoring the importance of international partners. The highest priority for the administration was the domestic threat of a disease outbreak caused by terrorists.<sup>12</sup> International public health issues mainly involved the HIV/AIDS and SARS outbreaks, overlooking the role that other states play in bioterrorism threats. In July 2001, the Bush Administration forced a suspension of the Biological Weapons Convention (BWC) after it was asked to sign onto a verification protocol that would legally bind American biodefense programs to greater investigation and inspection.<sup>13</sup> This forced suspension solidified the Bush administration stance on bioterrorism as a domestic threat due to the fact that the administration continued to attend meetings - but only when global health issues were discussed.<sup>14</sup> Many also saw this approach as predictable and understandable especially after 9/11 and the anthrax attacks. Given that the United States had very little biodefense structures actually in place, the “first level” of change required dealing with basic domestic obstacles such as “funding, augmenting personnel, and reorganization.”<sup>15</sup> Overall, the Bush administration’s focus on biodefense centered on preparedness and a domestic threat response. Years after Bush announced this strategy, a growing trend in terrorism began to emerge. This trend, leaderless resistance, would test the very the limits of the U.S. terrorism policy in general and give way to new threats to the security of an already vulnerable nation.

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<sup>12</sup> Ibid., 137.

<sup>13</sup> Clunan, “Building Information Networks for Biosecurity,” 302.

<sup>14</sup> Koblentz, “From Biodefense to Biosecurity,” 137.

<sup>15</sup> Richard Danzig, “A Decade of Countering Bioterrorism: Incremental Progress, Fundamental Failings,” *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 10, no. 1 (2012): 50.



## The Leaderless Resistance Movement

Jeffrey Kaplan notes that the present day idea of the leaderless resistance movement can be defined as, “a kind of lone wolf operation in which an individual, or a very small, highly cohesive group, engage in acts of anti-state violence independent of any movement, leader or network of support.”<sup>16</sup> The idea of leaderless resistance became popular in the 1980s with radical right wing groups who were attempting to resuscitate their dying organizations.<sup>17</sup> White separatists have the most experience to draw from concerning the leaderless resistance structure. While the leaderless resistance method was used in the past by these organizations, it was not always successful. Members had difficulty acquiring adequate information about the movement without direct contact with a particular organization.<sup>18</sup> Marc Sageman, who specializes in research regarding leaderless jihad, argues that it is a sub-sect of the leaderless resistance movement and is a key concern for U.S. officials. The introduction of the Internet ushered in a new incarnation of the leaderless resistance movement. The terrorist attacks in Casablanca, Madrid, and London were the first type of leaderless resistance type attacks involving violent Islamists.<sup>19</sup> The small groups involved in these attacks did not have any ties to the al Qaeda organization. They were only influenced by the speeches given by al Qaeda leaders and Internet postings supporting the Jihadist movement.<sup>20</sup> One such example, scholars argue, are the postings of Mustafa Setmariam Nasar who made several postings

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<sup>16</sup> Jeffrey Kaplan, “Leaderless Resistance,” In *Inside Terrorist Organizations*, edited by David C. Rappaport, (London: Frank Cass, 2001), 260.

<sup>17</sup> Ibid., 261.

<sup>18</sup> Daveed Gartenstein-Ross and Madeleine Gruen, “Leadership vs. Leaderless Resistance: The Militant White Separatist Movement’s Operating Model,” 18 Feb. 2010, <http://www.defenddemocracy.org/publications/leadership-vs-leaderless-resistance-the-militant-white-separatist-movement> (24 Feb. 2012).

<sup>19</sup> Marc Sageman, *Leaderless Jihad*, (Philadelphia, PA: University of Pennsylvania Press, 2008), 133.

<sup>20</sup> Ibid., 139.

about the need to “rise up” in Iraq by forming “individual groups” to fight against the Iraqi and American security forces.<sup>21</sup>

Internet postings by al Qaeda, including *Inspire* magazine, have provided even the most uneducated and under supplied individual with an opportunity to carry out an attack against the United States. The 2013 Boston Marathon bombers Tamerlan and Dzhokhar Tsarnaev were motivated to carry out the attack through postings tied to *Inspire* magazine and even found background information about how to build their pressure cooker bombs from it as well.<sup>22</sup> Other leaderless resistance attacks on the United States involved Nidal Malik Hassan at Fort Hood and Abdulhakim Mujahid Muhammad, who fired at U.S. military recruitment stations and was later arrested next to the Pentagon.<sup>23</sup> The cases were not the first time that this type of “lone wolf” threat was discussed by law enforcement. Statements by former Secretary of Homeland Security Janet Napolitano and former Director of the Federal Bureau of Investigations, Robert Mueller, pointed to the growing threat of these unaffiliated individuals in 2011 and 2013.<sup>24</sup> Edwin Bakker and Beatrice de Graaf discuss this growing threat in discussing the counterterrorism approach to the lone wolf terrorism trend. Bakker and de Graaf also suggest that the threat is not limited to individuals influenced by al Qaeda or the general jihadist movement but that it could also involve right wing extremists and separatists like it did in the 1980s. In January 2014, two Georgia men were found guilty of possession of a biological toxin for use as a

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<sup>21</sup> Paul Cruickshank and Mohannad Hage Ali, “Abu Musab Al Suri: Architect of the New Al Qaeda,” *Studies in Conflict & Terrorism* 30, (2007): 10.

<sup>22</sup> Anthony Lemieux, Jarret Brachman, Jason Levitt, and Jay Wood, “Inspire Magazine: A Critical Analysis of its Significance and Potential Impact Through the Lens of the Information, Motivation, and Behavioral Skills Model,” *Terrorism and Political Violence* (2014): 2.

<sup>23</sup> Edwin Bakker and Beatrice de Graaf, “Preventing Lone Wolf Terrorism: some CT approaches discussed,” *Perspective on Terrorism* 5, no. 5-6 (2011): 44.

<sup>24</sup> Risa A. Brooks, “Muslim “Homegrown” Terrorism in the United States,” *International Security* 36, no. 2 (2011): 8.

weapon.<sup>25</sup> In November 2011, the men were arrested for plotting a ricin attack on federal officials. They were influenced by information they found online about U.S. citizens attacking government officials through rudimentary research of using castor beans to make ricin, a toxin.<sup>26</sup> This case opens the door to a new aspect of the leaderless resistance trend, bioterrorism.

Aside from several reports, many scholars think that the still relatively small number of leaderless resistance type attacks make up a tiny fraction of total casualties linked to terror attacks.<sup>27</sup> Sageman argues that the uptick in attacks is notable, but the leaderless resistance movement requires a “constant stream of new violent attacks to hold the interest of potential newcomers to the movement.”<sup>28</sup> The necessity would eventually lead to the demise of the movement but no one is sure about how long that downward trend would take and what would be there to replace it. To contrast this argument, a 2013 quantitative study by the International Institute for Counter-terrorism, utilizing data from START (the National Consortium for the Study of Terrorism and Responses to Terrorism), RAND, and various news outlets, determined that the “United States has the highest level of lone wolf terrorism” and that the “total number of incidents in the United States – and in the Western world in general – is increasing.”<sup>29</sup> This growing trend of

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<sup>25</sup> Associated Press, "Jury Finds 2 Georgia Men Guilty in Ricin Plot," January 17, 2014, <http://www.usatoday.com/story/news/nation/2014/01/17/ricin-georgia-guilty/4592157/> (accessed February 16, 2014).

<sup>26</sup> Ryan Jaslow, "Ga. Men Arrested for Allegedly Plotting Ricin Attack: What's Ricin?," *CBS News*, November 2, 2011, [http://www.cbsnews.com/8301-504763\\_162-20128934-10391704/ga-men-arrested-for-allegedly-plotting-ricin-attack-whats-ricin/](http://www.cbsnews.com/8301-504763_162-20128934-10391704/ga-men-arrested-for-allegedly-plotting-ricin-attack-whats-ricin/).

<sup>27</sup> Bakker and de Graaf, "Preventing Lone Wolf Terrorism: some CT approaches discussed," 45.

<sup>28</sup> Sageman, *Leaderless Jihad*, 145.

<sup>29</sup> Sarah Tiech, "Trends and Developments in Lone Wolf Terrorism in the Western World: An Analysis of Terrorist Attacks and Attempted Attacks by Islamic Extremists," October 2013, International Institute for Counter-Terrorism, 22, <http://www.ict.org.il/LinkClick.aspx?fileticket=qAv1zIPJIGE%3D&tabid=66>.

leaderless resistance has also led to the bigger question about its potential ties to bioterrorism.

### **Leaderless Resistance and Bioterrorism**

The increase in visibility of the leaderless resistance, or lone actor, threat brings attention to lone actor attempts to acquire BW agents and if they even have the capability to carry out a bioterrorism attack. A conventional weapon attack is consistently seen as a more probable occurrence by those who argue lone actors and bioterrorism are not a true threat.<sup>30</sup> In a 2014 report by START it was revealed that jihadists groups, disgruntled actors, and domestic right-wing groups were all flagged for presenting a “significant CB [chemical or biological] threat to the United States within the next decade” when analyzed with both qualitative and quantitative methods.<sup>31</sup> In addition, “rapid and often discontinuous advances in technological development” have presented a new range of possibilities for the lone actor CBRN threat. Acquisition could become easier, simplified technological processes could make footprints less visible, and technology could help avoid detection because testing can be done virtually.<sup>32</sup> The technological trends, coupled with detailed analyses of lone actor capabilities and intentions, highlight the connection between leaderless resistance and bioterrorism. Overall, the leaderless resistance trend began to pick up in the United States around 2008, just as the Obama administration released a new approach to the growing problem of bioterrorism.

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<sup>30</sup> Rachel Oswald, "Despite WMD Fears, Terrorists Still Focused on Conventional Attacks | GSN | NTI," NTI: Nuclear Threat Initiative, <http://www.nti.org/gsn/article/despite-wmd-fears-terrorists-still-focused-conventional-attacks/> (accessed April 27, 2014).

<sup>31</sup> Markus Binder and Gary Ackerman, "Anatomizing Chemical Biological Non-State Adversaries," 2014, 2-3, [https://www.start.umd.edu/pubs/STARTResearchBrief\\_Anatomizing.pdf](https://www.start.umd.edu/pubs/STARTResearchBrief_Anatomizing.pdf).

<sup>32</sup> Gary Ackerman and Lauren Pinson, "Gauging the Threat," *Defence Procurement International*, 2013, (August): 53, <http://edition.pagesuite-professional.co.uk/launch.aspx?pbid=4a891638-58....>)

## **U.S. Bioterrorism Strategy After Leaderless Resistance Trend Began**

The election of Barack Obama to the presidency led to a shift in the U.S. bioterrorism strategy. This strategy shift cannot be exclusively tied to Obama taking office, due to the changing trends in U.S. security as noted with the leaderless resistance trend. Obama's strategy focused on the prevention aspect of bioterrorism and BW use. The strategy changes are an attempt to influence not only the intent but also the capability of actors.<sup>33</sup>

The intent of actors to develop BW is an important aspect of Obama's strategy. The use of domestic laboratory security is also a major part of the strategy to control the distribution and number of "high-risk pathogens and toxins."<sup>34</sup> Partnerships with the laboratory community can help influence those who have intentions to attack the United States with BW. A "culture of responsibility" in the life sciences field is also noted as a change in the bioterrorism strategy.<sup>35</sup> The administration notes the important role of life scientists who hold onto sensitive information that could be used for good or evil. Positive norms are of the utmost importance for the U.S. bioterrorism strategy in order to maintain a global awareness to prevent the use of biological weapons for terrorism and death.

Policies that respond to the capabilities of actors also play a large role in the Obama strategy. The 2009 bioterrorism strategy aims to provide biosecurity rather than biodefense, as seen in the 2004 strategy. While a biosecurity-focused policy aims to prevent a biological attack before it occurs, a biodefense-focused policy aims to deal with

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<sup>33</sup> Koblenz, "From Biodefense to Biosecurity," 132.

<sup>34</sup> Barack Obama, *National Strategy for Countering Biological Threats*, (Washington, DC: National Security Council, 2009), 13.

<sup>35</sup> *Ibid.*, 4-8.

the aftermath of a BW attack through medical care and military responses. This prevention takes place through coordination with various actors to reduce the overall threat. Data sharing with federal, state, local, and international law enforcement is highlighted in the policy.<sup>36</sup> This sharing of information could assist in the aftermath of an attack by ensuring that law enforcement can work closely with medical professionals to lessen the effects of an attack as well as locate the perpetrator.

The emphasis of biosecurity also ties into the role of common citizens to report suspicious activity. Mass orders of suspicious chemicals or suspicious behavior by a coworker in a lab who has access to high-level toxins can be the first steps in combating bioterrorism.<sup>37</sup> The use of microbial forensics to decipher the biological source of an attack is also noted as requiring extensive federal research to bolster the field in itself.<sup>38</sup> The global knowledge of microbial forensics can deter actors plotting a bioterrorism attack, therefore influencing them to not utilize their capabilities. Lastly, in terms of biosecurity, the administration notes that the intelligence community must play a greater role in vetting valuable intelligence that is gathered domestically but internationally as well to thwart an attack.<sup>39</sup> All of these elements within biosecurity-focused policy are designed to reduce the overall threat of bioterrorism by monitoring signs of intentions to cause harm and considerably limiting the capabilities of those looking to launch an attack.

The major enhancement of the U.S. bioterrorism strategy under Obama is the inclusion of the international community. The security of U.S. labs containing high-risk

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<sup>36</sup> Ibid., 15.

<sup>37</sup> Ibid., 16.

<sup>38</sup> Ibid., 17.

<sup>39</sup> Ibid., 11.

toxins is only a small part of the equation of the bioterrorism threat. Partnerships with the global community assist in greatly diminishing the capabilities of actors looking to launch a bioterrorism attack not only in the United States, but in other countries as well. Some labs in other states simply do not possess the technology, intelligence, and oversight needed to adequately safeguard BW and toxins. Koblenz argues that the new strategy highlights the importance of empowering other states to implement advances security measures for the biological agents.<sup>40</sup> The importance of the Biological Weapons Convention (BWC) is also noted in the new strategy, which pushes for greater involvement in the international community than in the Bush administration policy.<sup>41</sup> While the Obama administration has not made a promise to pursue the previously rejected protocol, the United States did send in Secretary of State Hillary Clinton to address the BWC in 2011. This inclusion is a sign of respect and importance that the United States has made towards the BWC members.<sup>42</sup>

### **Similarities Between Old and New U.S. Bioterrorism Strategies**

While the two strategies have different emphasis, biodefense and biosecurity, they share certain similarities. It is important to note that many of the experts used by President Bush in 2004 to draft his strategy were also used in 2009 with the Obama administration. Both Bush and Obama stated that law enforcement agencies at every level had to be able to communicate effectively about the current threats. Both Bush and Obama also discussed adequate vaccine availability, with an emphasis placed on a rapid response by healthcare facilities. A detailed analysis of federal biodefense budgets released for fiscal years 2001 to 2014 also revealed that on average, both administrations

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<sup>40</sup> Ibid., 6.

<sup>41</sup> Ibid., 19.

<sup>42</sup> Koblenz, "From Biodefense to Biosecurity," 137.

have allocated \$5.5 to \$5.9 billion per year to both biodefense and indirect biodefense measures. Allocations of strictly biodefense related funding decreased with the start of the Obama Administration but legacy detection systems such as Bioshield, continue to be funded.<sup>43</sup> Overall, the two policies shared many common arguments but also many differences concerning how to handle this growing threat.

## **Policy Implications Concerning Leaderless Resistance Trend**

### *Research Capabilities*

The research capabilities concerning bioterrorism have greatly improved since 2001. It no longer takes years to pin down the origin of a toxin and/or BW due to the advances in microbial forensics. The Amerithrax investigation took a total of seven years to attribute the particular anthrax spores used to the specific strand of anthrax studied by Bruce Ivans, an anthrax researcher at the Army laboratory in Maryland.<sup>44</sup> This attribution process has improved greatly in order to rapidly identify and apprehend the perpetrators of a BW attack.<sup>45</sup> The leaderless resistance trend has increased the need for this type of research to discern the source of a bioterrorism attack before more attacks can occur. Due to the low level of detection involved with leaderless resistance attacks, it is very probable that an individual or small group could carry out successive attacks over a long period of time without the fear of attribution. The public knowledge of this type of research could possibly be a deterrent to potential leaderless terrorists who would be less likely to carry out multiple attacks due to the short time to attribute the attack. Research

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<sup>43</sup> Tara Kirk Sell and Matthew Watson, "Federal Agency Biodefense Funding, FY2013-FY2014," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, September 2013, 11(3): 202.

<sup>44</sup> Gregory D. Koblenz and Jonathan B. Tucker, "The Four Faces of Microbial Forensics," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 7, no. 4 (2009): 390.

<sup>45</sup> Koblenz, "From Biodefense to Biosecurity," 135.



capabilities, such as microbial forensics, have understandably improved due to advances in scientific research but they have been affected by the shift in the threat overall.

### *Role of Law Enforcement*

The role of law enforcement has changed considerably since the rise of leaderless resistance. State and local law enforcement were used as the “foot soldiers” against the threat of terrorism for the federal law enforcement agencies before the trend began. The rise of leaderless resistance invariably led to detection methods being used by local law enforcement to pick up on suspicious behaviors in the community and share that information with their federal counterparts. The leaderless resistance model does not fit into previous ideas of a terrorist. Lone wolves and the like “usually avoid contact with others.”<sup>46</sup> This cut-off in communication has made traditional detection methods obsolete. A closer relationship with local communities is of growing importance as these are the individuals most likely to detect a negative shift in the behavior of one of its inhabitants. Those partaking in leaderless resistance do give off signals, but they are often shrouded by an attempt to portray a normal life. In terms of bioterrorism, these individuals could easily go undetected as they build or acquire BW. Engaging with those working in facilities with access to biological agents is key to detecting this new type of radicalization. Federal law enforcement has begun a relationship with the scientific community to bridge the gap in communication and knowledge about the bioterrorism threat.<sup>47</sup>

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<sup>46</sup> Bakker and de Graaf, “Preventing Lone Wolf Terrorism,” 46.

<sup>47</sup> Koblenz, “From Biodefense to Biosecurity,” 135.

### *Data Sharing*

The role of data sharing has changed considerably since the trend in leaderless resistance came about. Sharing of information with the scientific community was virtually non-existent due to a high level of mistrust between the government and scientists working in high-risk labs. Greater communication is now present concerning government bodies, such as the FBI, and the scientific community. The FBI's WMD Coordinators, in each of the 56 field offices, engage with local scientists and populations to build relationships and deter threats. This open relationship has helped the government gather important information about scientific advances concerning biological weapons and disseminate it to the proper agencies in order to keep the public safe.<sup>48</sup> Obama's 2012 *National Strategy for Biosurveillance* also highlighted that there would be an increase in fusion centers for law enforcement, intelligence, and scientific information to meld together in order to fully integrate "biosurveillance capabilities."<sup>49</sup>

### *Role of International Actors*

The risk of a leaderless attack is one shared by many different countries and not just the United States. A new level of engagement with the international community has been introduced in order to mitigate the threat of a leaderless individual or small group getting their hands on BW. Prior to the rise in attacks, the United States was very closed off from the rest of the international community concerning BW. The new openness, as seen with the State Department and Department of Defense bioengagement programs, enables the United States to share vital scientific and law enforcement information to other countries in order to secure their own biological agents and instill the appropriate

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<sup>48</sup> Ibid., 147.

<sup>49</sup> Barack Obama, *National Strategy for Biosurveillance*, Washington, DC: White House, 2012, 7.

detection systems needed to mitigate this type of threat. Maintenance of a “global health perspective” was highlighted in Obama’s 2012 biosurveillance strategy as key for future success noting that a “network of information nodes” will continue to enhance not only U.S. domestic security but international security as a whole.<sup>50</sup>

### **Hypothesis concerning Leaderless Resistance and U.S. Bioterrorism Strategy**

There is not a large amount of academic literature on leaderless resistance relating to U.S. policy but the changes in U.S. policy since 2001 coincide with the changing terrorism environment within the United States. The evidence will be able to demonstrate a trend between the growing number of leaderless resistance attacks and arrests in the United States and the changing of the U.S. bioterrorism strategy. While a variety of factors have contributed to the change in strategy, the research will likely show that the leaderless resistance aspect has had one of the greatest impacts on the U.S. bioterrorism strategy due to the decentralized nature of the threat.

### **Bioterrorism Case Studies**

There have been many bioterrorism arrests and investigations in the past decade that help to elaborate on the shift to leaderless resistance. A distinct pattern presents itself when an analysis of these cases is carried out. The pattern illustrates the change in the type of cases that were observed during this time period. An analysis of cases prior to the rise of leaderless resistance and of those since the rise will be analyzed in terms of research capabilities at the time, the role of law enforcement, data sharing, and the role of international actors.

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<sup>50</sup> Ibid, 5.

### *Case Studies Before the Rise of Leaderless Resistance*

In the wake of the September 11, 2001 terrorist attacks, a new threat emerged for the American public. This case would ultimately change U.S. bioterrorism policy in every way imaginable. On September 18, 2001 and October 9, 2001 five letters were mailed to the AMI building in Florida, NBC Studios and *New York Post* in New York City, and to the offices of Senators Daschle and Leahy in Washington, DC. All five of these letters were laced with 1-2 grams of anthrax, a lethal biological agent.<sup>51</sup> A total of 22 people were sickened after they came in contact with the powdery substance inside of the envelopes. Five people later died who were infected with the respiratory form, which is far deadlier than its skin counterpart.<sup>52</sup> Shortly after the death of the first victim an autopsy revealed that anthrax was the cause of death. The Amerithrax case is a pillar within the group of cases that took place between 2001 and 2008. Within these cases key components will be analyzed and compared to their counterparts that took place from 2008 to 2014.

### *Research Capabilities pre-Leaderless Resistance*

The Amerithrax investigation was the first of its kind in the U.S., propelling the need for adequate research methods to detect the source of a biological weapon. The time period of investigation for the Amerithrax case took a staggering 9 years to complete. During the initial years of the investigation, the FBI considered Steven Hatfill, a virologist, the primary suspect in the case. After further investigation it was determined that Bruce Ivans, an anthrax researcher at the U.S. Army Medical Research Institute of

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<sup>51</sup> Anthrax is actually a disease but the disease and causative agent, *Anthraxis bacillus*, are both referred to in this thesis as “anthrax” for continuity purposes.

<sup>52</sup> Jeffrey R. Ryan and Jan Glarum, "Case Studies," In *Biosecurity and Bioterrorism: Containing and Preventing Biological Threats*, Amsterdam: Butterworth-Heinemann, 2008, 146.

Infectious Diseases in Maryland, was the primary suspect.<sup>53</sup> Ivans' access to the specific strand of anthrax used and his activities leading up to and after the attacks led investigators to name him as the only suspect. The FBI tied Ivans to the specific strand of the agent after years of microbial forensic investigation, which was the first such use of this new technology.<sup>54</sup> It is important to note, however, that this technology was introduced later on in the investigation; therefore, a portion of the advancement took place during the "Leaderless Resistance" time period.

The lag in investigative techniques was also seen in another case in 2001, the case of Kenneth Olsen. Just weeks before the September 11<sup>th</sup> attacks, an employee at Agilent Technologies in Washington state was alarmed when they picked up a print job detailing how to construct a bomb. It was later determined that Kenneth Olsen, an employee at Agilent Technologies Inc in Washington state, printed the document. A coworker of Olsen notified management who promptly fired Olsen and contacted authorities. Within Olsen's desk at work were various books on how to commit murder. His belongings were subsequently sent off to a lab to be tested. Months later, most likely due to the mass panic in the law enforcement community after the 9/11 and anthrax attacks, officials were notified that Olsen's belongings tested positive for ricin. Olsen was later convicted of producing and possessing the deadly ricin toxin but serious implications could have occurred due to the slow process of testing his belongings.<sup>55</sup> These implications are

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<sup>53</sup> Koblentz and Tucker, "The Four Faces of Microbial Forensics," 390.

<sup>54</sup> Federal Bureau of Investigation, "Amerithrax or Anthrax Investigation," FBI — Homepage, <http://www.fbi.gov/about-us/history/famous-cases/anthrax-amerithrax> (accessed March 13, 2012).

<sup>55</sup> Bill Morlin, "Ricin maker sentenced," The Spokesman-Review, October 29, 2003, <http://www.spokesmanreview.com/news-story.asp?date=102903&ID=s1431564> (accessed March 13, 2012).

further discussed in the following paragraph which discusses the case of the “Fallen Angel.”

A few years later the lack of research capabilities would rear its ugly head again. In October 2003, a package was hand delivered to a mail sorting facility near the Greenville-Spartanburg International Airport in South Carolina. Inside the package was a letter and a vial with a label stating “Caution ricin poison enclosed in sealed container. Do not open without proper protection.”<sup>56</sup> The letter threatened to dump ricin into the water supply if mandated sleeping regulations for long haul truck drivers were not recalled. The writing stated that the person who wrote the letter was the head of fleet for a tanking company and signed the bottom of the letter, “Fallen Angel”. No one knew who could have delivered the package to the facility and within a month another letter appeared at a mailing facility at Bolling Air Force Base in Washington, DC. The package contained the same type of message, with a vial of ricin, and was signed by “Fallen Angel”. The perpetrator of the packages was never found due to the lack of evidence found in the packages.<sup>57</sup> At the time microbial forensics did not exist, which implies that had the research abilities been present, “Fallen Angel” could have been brought to justice.

Perhaps one of the cases that hit close to home for many in Washington D.C. was the Bill Frist Senate mailings. An alert was issued in February 2004 after ricin was discovered in a letter-opening machine in the Dirksen Office Building that handled mail for Senator Bill Frist’s office. Investigators sorted through “20,000 pieces of mail” to find

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<sup>56</sup> Michael Lemonick, "Homegrown Terror," *Time*, February 16, 2004, <http://www.time.com/time/magazine/article/0,9171,588396,00.html> (accessed March 13, 2012).

<sup>57</sup> Ibid.

the source of the toxin.<sup>58</sup> They could not find the source envelope and no other piece of mail contained the toxin. Air filters were searched as well as other surfaces such as doorknobs and windowsills. Investigators determined that the ricin “was mostly paper dust, with traces of ricin so minute, they can’t be evaluated for particle size or purity.”<sup>59</sup> Samples could have been gathered from several staffers that had come in contact with the mail sorter, enabling more elaborate research, based on what was available at the time.

Research capabilities aren’t the only aspect of these cases that requires analysis. The role of law enforcement has also changed greatly based on what can be inferred from the review of these cases; this change will be discussed in the following section.

#### *The Role of Law Enforcement pre-Leaderless Resistance*

Mass confusion ensued after the Amerithrax attacks. Several government agencies opened cases and spent millions of dollars investigating the attack. No solid policy had been created that established duties for each of the agencies to take on if such an attack occurred. The FBI took hold of the case eventually but years were wasted investigating the wrong person, Steven Hatfill. Eventual teaming with the scientific community lead to the discovery of Bruce Ivans but shortly before his would-be indictment in 2008, Ivans committed suicide. The formal investigation was officially closed on February 19, 2010 with the FBI maintaining that Ivans was the culprit.<sup>60</sup>

In terms of the Kenneth Olsen case, law enforcement was pulled into the situation as soon as the management at Olsen’s company filed a complaint. After gathering evidence from Olsen’s desk, officials sent the samples to a lab to be tested. Mass hysteria after 9/11 led to law enforcement officials assigned to the case to lag behind in getting the

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<sup>58</sup> Ryan and Glarum, "Case Studies," 147.

<sup>59</sup> Lemonick, "Homegrown Terror".

<sup>60</sup> Federal Bureau of Investigation, "Amerithrax or Anthrax Investigation".

adequate results. Law enforcement was also tasked to track down the truck that delivered the “Fallen Angel” letter in South Carolina, due to the statement in the letter that the perpetrator was a truck driver. The suspect was never identified and mailed yet another package that left law enforcement officials baffled.

In January 2005 a 22-year-old waiter was arrested after a telephone tipster revealed that he possessed weapons and poisons. In Steven Michael Ekberg’s bedroom investigators discovered a vial with a “brown granular substance” that later tested positive for ricin as well as castor beans.<sup>61</sup> Ekberg also possessed several weapons including an AK-47 and an Uzi. The tipster, who later became a confidential informant, told authorities that Ekberg had shown the toxin to him months prior to the phone call reporting his behavior. He stated, while picking up one of the containers that, “If I put this in your food, this would kill you immediately.”<sup>62</sup> The confidential source also stated that Ekberg expressed, “If the government ever did anything to him, he would take some sort of action.”<sup>63</sup> Ekberg’s mother stated that he suffered from depression and the FBI stated at the time of his arrest that they did not believe he had any ties to terrorists or extremists. Ekberg entered a guilty plea in May 2005 and received an unspecified sentence, per federal guidelines. The Ekberg case revealed a slight shift in the role of law enforcement. A source, not affiliated with law enforcement, contacted officials concerning Ekberg “showing off” deadly toxins as well as a barrage of weapons. The source was later developed into a confidential informant, revealing more detail about

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<sup>61</sup> “Marion County Man to Plead Guilty to Possession of Ricin,” SP Times, April 20, 2005, [http://www.sptimes.com/2005/04/20/news\\_pf/State/Marion\\_County\\_man\\_to\\_.shtml](http://www.sptimes.com/2005/04/20/news_pf/State/Marion_County_man_to_.shtml) (accessed April 6, 2012).

<sup>62</sup> “Florida man faces bioweapon charge,” CNN, January 14, 2005, [http://articles.cnn.com/2005-01-13/us/ricin.arrest\\_1\\_ricin-steven-michael-ekberg-castor-beans?\\_s=PM:US](http://articles.cnn.com/2005-01-13/us/ricin.arrest_1_ricin-steven-michael-ekberg-castor-beans?_s=PM:US) (accessed March 15, 2012).

<sup>63</sup> “Marion County Man to Plead Guilty to Possession of Ricin”.



what he or she saw in Ekberg's home.

### *Data Sharing pre-Leaderless Resistance*

The Amerithrax attack, in addition to 9/11, was an embarrassment for the law enforcement community as a lack of cooperation was apparent between agencies. Coordination began to take place between several government agencies including the U.S. Postal Service, FBI, and the Center for Disease Control (CDC). These agencies were unprepared to coordinate such a large and constantly developing case. Due to the fact that the attacks took place over several weeks, the agencies struggled to form a central strategy. Ultimately the FBI took control of the case for many years in order to find the culprit but had the various agencies shared information, the likelihood of Ivins being identified as the culprit much earlier is high. A lag in data sharing was also seen in the Olsen case as a large chunk of time passed before the test results were even revealed to law enforcement personnel.

The Senate mail room incident also revealed a lack in information sharing. For hours staffers came and went out of the "contaminated" area as the investigation took place. Conflicting reports also surfaced about the safety procedures that were in place for an attack such as this one. Several staffers stated that they were told to go home, without a health screening or biological decontamination shower. Later on in the day the staffers that were still present were required to go through a decontamination shower built in the hallway of the building. No one followed through with procedures to inform the office about what to do in the event of an attack and at the time the suspect could have even been in the building.<sup>64</sup> All persons present in the building at the time of the discovery

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<sup>64</sup> Ryan and Glarum, "Case Studies," 147.

should have been screened for exposure, if not to discover the culprit, but to protect the American public from being contaminated.

### *The Role of International Actors pre-Leaderless Resistance*

The international community was pulled into the Amerithrax investigation when the FBI took primary control of the investigation. Over the years the investigation spread to approximately 10,000 witness interviews on six different continents.<sup>65</sup> Prior to this part of the Amerithrax investigation, the U.S. was cut off from the international community in terms of bioterrorism threat reduction.

### *Case Studies During the Rise of Leaderless Resistance*

Around 2008 the trend in bioterrorism incidents began to change. Those arrested began to show more radical beliefs and exhibit more structured experiments with deadly agents. The most disturbing of bioterrorism arrests was the apprehension of four older men in Georgia. The men were arrested relating to charges of “plans to obtain an unregistered explosive device...and to manufacture the biological toxin ricin for use in attacks against other U.S. citizens and government personnel and officials.”<sup>66</sup> All four of the men were members of a “fringe militia group” aimed to overturn the U.S. government and two of them were found guilty in 2014 of possessing a biological toxin with intent to use it as a weapon.<sup>67</sup> An analysis of these cases from 2008 to 2014 will be performed through a breakdown of important policy elements.

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<sup>65</sup> Federal Bureau of Investigation, "Amerithrax or Anthrax Investigation".

<sup>66</sup> "North Georgia Men Arrested, Charged in Plots to Purchase Explosives, Silencer and to Manufacture a Biological Toxin," FBI, November 1, 2011, <http://www.fbi.gov/atlanta/press-releases/2011/north-georgia-men-arrested-charged-in-plots-to-purchase-explosives-silencer-and-to-manufacture-a-biological-toxin> (accessed March 15, 2012).

<sup>67</sup> Associated Press, "Jury Finds 2 Georgia Men Guilty in Ricin Plot."

### *Research Capabilities During Leaderless Resistance Trend*

As noted in the previous section, the Amerithrax investigation ushered in a new type of research concerning bioterrorism, microbial forensics. Due to the fact that the investigation overlapped into the leaderless resistance time period it should be noted as an improved capability that came about at the very end of the pre-leaderless resistance time period. While research capabilities have changed considerably since early 2000, some of the most notable changes took place with the other policy elements.

### *The Role of Law Enforcement During Leaderless Resistance Trend*

Law enforcement took on a new role during the leaderless resistance movement as detection became complicated due to the “lone wolf” mindset to decrease communication to lessen the chances of being detected. The most prominent instance of this would be the 2011 arrests in Georgia. A confidential source attended the meetings where the men discussed their plan to attack government officials and their buildings, in addition to the local police, through the use of explosive devices and silencers. The men did state that they knew the actions would be considered murder during the militia meetings but they “reasoned that the actions were necessary in accordance with their ideology.”<sup>68</sup> Two of the men, Thomas and Roberts, described a friend of theirs to the source stating that the friend had manufactured ricin and had access to castor beans to produce it. During one of the meetings, one of the men stated that he wanted to produce 10 pounds of ricin to release in various U.S. cities. He described that the toxin could be released into the air from a moving vehicle on the interstate to spread the toxin further. This confidential source provided a wealth of knowledge about the inner workings of the militia group and the expertise that its members brought to the table. Without the use of this source, it was

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<sup>68</sup> Ibid.

very unlikely that law enforcement would have been able to get the evidence they needed to convict the subjects.

Law enforcement was challenged with ricin letters for the first time since the 2003 and 2004 mailings in 2013. Shortly after the 2013 Boston Bombings several letters laced with ricin were sent to politicians, sending the public into a panic. In April 2013 J. Everett Dutschke of Mississippi mailed three ricin-laced letters to President Obama, Senator Roger Wicker, and a Mississippi judge.<sup>69</sup> Only a month later Texas actress Shannon Guess Richardson mailed three letters to President Obama, Mayor Michael Bloomberg, and Mark Glaze.<sup>70</sup> Both Dutschke and Richardson attempted to frame other individuals for their crimes but law enforcement worked to ensure the toxin was attributed to the correct people. Dutschke included phrases commonly used by his adversary, Paul Kevin Curtis, in his letters but eventually pled guilty to several charges including developing a biological agent and mailing threatening letters to the President.<sup>71</sup> Richardson approached law enforcement days after the letters were mailed to state that her husband was the culprit but suspicions quickly turned to her when law enforcement further analyzed the letters. Months later Richardson pled guilty to mailing the letters herself.<sup>72</sup>

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<sup>69</sup> Kimberly Kindy, "J. Everett Dutschke's Journey to Ricin Suspect," *The Washington Post*, May 21, 2013, [http://www.washingtonpost.com/politics/j-everett-dutschkes-journey-to-ricin-suspect/2013/05/20/23483842-b9bd-11e2-aa9e-a02b765ff0ea\\_story.html](http://www.washingtonpost.com/politics/j-everett-dutschkes-journey-to-ricin-suspect/2013/05/20/23483842-b9bd-11e2-aa9e-a02b765ff0ea_story.html) (accessed February 27, 2014).

<sup>70</sup> Andrew Rafferty, "Texas woman indicted over ricin letters sent to Obama, Bloomberg," NBC News, [http://usnews.nbcnews.com/\\_news/2013/06/28/19190519-texas-woman-indicted-over-ricin-letters-sent-to-obama-bloomberg?lite](http://usnews.nbcnews.com/_news/2013/06/28/19190519-texas-woman-indicted-over-ricin-letters-sent-to-obama-bloomberg?lite) (accessed February 27, 2014).

<sup>71</sup> Alan Blinder, "Defendant Admits Sending Letter With Ricin to Obama," *The New York Times*, January 17, 2014, [http://www.nytimes.com/2014/01/18/us/defendant-admits-sending-letter-with-ricin-to-obama.html?\\_r=0](http://www.nytimes.com/2014/01/18/us/defendant-admits-sending-letter-with-ricin-to-obama.html?_r=0) (accessed February 27, 2014).

<sup>72</sup> "New Boston, Texas Woman Guilty of Sending Ricin Letters," U.S. Department Of Justice: US Attorney's Office, <http://www.justice.gov/usao/txe/News/2013/edtx-Richardson-121013.html> (accessed March 2, 2014).

Law enforcement also shifted to be more aware of suspicious occurrences within the scientific community. In December 2011, a sheriff in Texas pulled over Karl Jasheway for suspected drunk driving but came across something more incriminating in the back seat of Jasheway's car. Jasheway had thirteen vials of chemicals and various pieces of lab equipment from University of Texas-Austin, where he was conducting research as part of his graduate studies. In January 2012, Jasheway's home was searched and an additional 44 tubes of chemicals were found. Shortly after this discovery, he became a target for a federal investigation. Prior to the 9/11 terrorist attacks and the ensuing anthrax attacks, it could have be argued that law enforcement would not think twice about vials in a scientist's car. New policies and advancement in research has demonstrated that law enforcement takes the threat of biological chemicals much more seriously than before. The law enforcement community has also made more of an effort to increase data sharing between federal agencies, local law enforcement, businesses, and everyday citizens.

#### *Data Sharing During Leaderless Resistance Trend*

New methods of data sharing between government agencies were seen with an arrest involving the illegal sale of abrin in early 2014. In April 2013 agents from Homeland Security Investigations (HSI) began conducting an investigation into illicit sales activity taking place on a website named "Black Market Reloaded" (BMR). BMR provided a platform for individuals to sell illegal goods such as biological agents and explosives, while hiding their true location. HSI agents began conducting an undercover investigation, in coordination with the FBI, on a BMR seller advertising the sale of abrin,

a deadly toxin much like ricin but more lethal.<sup>73</sup> The BMR seller, Jesse William Korff, gave specific instructions to the undercover agent that “if you drop the abrin in someone’s drink Wednesday he will be dead Friday and there is no way to trace it after 24 hours of ingestion.”<sup>74</sup> Korff arranged a pickup of the toxin at a rest stop in Florida for the undercover agent and was arrested on January 18th, 2014. Coordination between FBI and HSI enabled a smooth arrest of an individual producing a biological agent intended to cause death.<sup>75</sup>

Data sharing also occurred with the scientific community concerning the arrest of Jasheway. Further testing of the chemicals in the vials in his car revealed the DNA chain of ricin A, a non-lethal chain of the agent. Jasheway was conducting research in the UT lab using ricin A. It was recently noted that during the search of the Robertus lab in December 2011, federal investigators discovered “25-year-old archival samples of whole ricin...identified undisturbed in the back of a freezer.”<sup>76</sup> Castor beans were also found in the lab, from which ricin is extracted. The head of the lab stated about the FBI that, “All I can tell you is that what they’re looking at now has nothing to do with the lab... They found something entirely different.”<sup>77</sup> The facilitation of information concerning Jasheway’s research was essential to his arrest and the discovery of ricin on the premises.

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<sup>73</sup> "Florida Man Arrested, Charged In New Jersey With Sale Of Deadly Toxin On Underground Online Marketplace," US Attorney's Office - District of New Jersey, <http://www.justice.gov/usao/nj/Press/files/Korff,%20Jesse%20Arrest,%20Complaint%20PR.html> (accessed March 5, 2014).

<sup>74</sup> M. Alex Johnson, "Florida teen sold deadly toxin abrin online, US says," NBC News, [http://investigations.nbcnews.com/\\_news/2014/01/24/22435409-florida-teen-sold-deadly-toxin-abrin-online-us-says?lite](http://investigations.nbcnews.com/_news/2014/01/24/22435409-florida-teen-sold-deadly-toxin-abrin-online-us-says?lite) (accessed March 5, 2014).

<sup>75</sup> "Florida Man Arrested, Charged In New Jersey With Sale Of Deadly Toxin On Underground Online Marketplace."

<sup>76</sup> Forrest Wilder, "Theft From UT Lab Prompts FBI Investigation of UT Student," The Texas Observer, <http://www.texasobserver.org/forrestforthetrees/theft-from-ut-lab-prompts-fbi-investigation-of-ut-student> (accessed March 15, 2012).

<sup>77</sup> Ibid.

### *The Role of International Actors During Leaderless Resistance Trend*

The inclusion of the international community was seen with the 2011 address from Hillary Clinton, the Secretary of State at the time, to the BWC. This address reopened doors that had been shut with the rejection of verification protocol that was brought forth during the Bush administration.<sup>78</sup> The 2013 address by the U.S. delegation to the BWC also maintained an upbeat message about opening more doors for international cooperation and communication.<sup>79</sup> While the bioterrorism arrests that have taken place during the past five years had an impact on domestic policies, it should also be noted that advancements made internationally will almost certainly affect the way the United States deals with the bioterrorism threat in the future.

### **Conclusion**

The bioterrorism threat is layered and has mutated since 2001 as the overall terrorism trend has shifted. The threat that came to light in September and October 2001 changed the face of American bioterrorism policy but the groups, and more notably individuals, who wish to inflict harm on the United States have mutated their approach to go on undetected while inflicting the most amount of damage possible. The changes that took place between the Bush and Obama administrations concerning bioterrorism spoke to the threats that presented themselves at the time and the advancements in science that had occurred. Key differences in the Bush and Obama approaches to the bioterrorism policy were certainly politically motivated and highlighted each administration's ideological approach to the complex issue. While the leaderless resistance trend that has

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<sup>78</sup> Koblenz, "From Biodefense to Biosecurity," 137.

<sup>79</sup> *U.S. Statement at the Biological Weapons Convention: Meeting of the States Parties to the Biological Weapons Convention* (December 9, 2013) (statement of Christopher Buck, Head of Delegation, United States of America).

risen quickly from 2008 to 2014 played a role in the policy selection process, its role was not as large as initially hypothesized.

Foreign policy changes overall lead to more inclusion of the international community in the fight against bioterrorism. The United States, and more specifically the Obama administration, has leaned more towards a policy of openness with the international community and more specifically with its allies in the past few years in order to broaden its security in the international community. The research capability improvements can be greatly attributed to solid advancements in science since the original Bush policy came out concerning bioterrorism. The role of law enforcement and data sharing, however, were impacted by the leaderless resistance trend. Leaderless resistance is certainly not limited to the bioterrorism threat as many other importance arrests have taken place since 2008 that were tied to individuals solely in possession of bombs or planning other small scale weapons attacks. The trend overall, and quite notably the bioterrorism aspect of leaderless resistance, has forever affected and improved the U.S. bioterrorism policy. Broader implications also exist for the overall international bioterrorism strategy when it concerns leaderless resistance. Many of the vulnerabilities present domestically concerning lone wolf activities with biological agents can certainly be present on a global scale. These weaknesses could also have an impact on future U.S. international bioterrorism strategies and international partnerships. While no one can predict what the future holds for the United States in terms of security against bioterrorism but one can hope that the approach taken by policy makers is and continues to be one step ahead of those looking to attack the United States.



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## **Chapter 2: A Quantitative Approach to Predicting State Bioweapons Threats**

While the threat of a state biological weapons program has waned in the past decade, it cannot be forgotten or pushed aside for the threat of non-state actor based threats. There was a time that state-run biological weapons (BW) programs were alive and thriving. The Soviet, and later Russian program, was the most haunting of all, encapsulating the largest and most robust biological weapons program the world had ever seen. Along with the Soviet program, came the programs of Iraq and South Africa. All three states held programs after the adoption of the Biological Weapons Convention (BWC), which became the international norm concerning biological weapons programs. When the United States and Britain abandoned their own BW programs, a shift occurred with the stigma surrounding offensive BW programs. Shortly after both of these programs ended in 1969, the BWC slowly began gaining ground. As the BWC has improved over the past decades, and the shift of the threat has moved towards non-state threats, the looming threat of a state run BW program has lost its weight.

Non-state threats remain high on the priority list for U.S. policymakers but the importance of the state-threat deserves a closer look. Given that there is now a precedent for rogue, meaning contentious states of U.S. world order, state-run BW programs, it is important to use this knowledge to help predict future BW threats towards the United States. How do known features of state-sponsored BW programs help produce a framework for predicting possible future threats to the United States? Overall, a combination of benign and threatening features (such as GDP, number of arms transfers, and infant mortality rate) of state-sponsored BW programs revealed behavioral patterns. These behavioral patterns were tested against current potential threat countries to reveal a

short list of possible future BW state threats towards the United States. Overall, the following states came up as the final list of possible future BW threats: China, Egypt, Israel, and Myanmar. After these results were analyzed for more specific patterns the following characteristics were present for these final threat countries: lower levels of democracy, lower press freedom ratings, high political terror ratings, and moderate levels of received arms transfers.

## **Methodology**

For this type of quantitative analysis it is important to lay groundwork for important terms found thorough the study. The historical group in this study is composed of rogue BW states, meaning states that were confirmed to have BW programs after the U.S. and Britain relinquished their BW programs in 1969. Through analysis, the three rogue BW states that will be analyzed are the Soviet Union (Russia), Iraq, and South Africa.<sup>80</sup> These states were used for the historical group in order to identify potential patterns with rogue BW state behavior during the actual possession of a weapon program. These three historical states will be evaluated with seven benign and threatening features (utilizing datasets), from 1983 to 1993, to include: Gross Domestic Product, Freedom of the Press rating, religion percentage, Political Terror rating, arms transfers received, infant mortality rate, and science and technical journal articles produced.

Patterns concerning each feature will be noted and tested against a list of current potential state threats. This potential threat group is composed of three sets of states: Non-signatory states to the BWC as of 2014, non-ratifying states to the BWC as of 2014, and threat countries identified in the DNI unclassified 702 reports on WMD threats to the

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<sup>80</sup> North Korea has long been considered to fall into the same category as Russia, South Africa, and Iraq but given an extreme lack of quantitative data across most datasets for the state, it could not be used for this analysis.



United States as of the last publication in 2012. Non-signatory states to the BWC are states that have neither signed, nor ratified the agreement. Essentially these states are not participating in the BWC at all but for the purpose of this study they will be referred to as non-signatory states. Non-ratifying states are those that have signed onto the BWC but have not ratified the agreement. By not ratifying the agreement, the state is not contractually bound to the agreement because, at a national level, the state has not implemented all of the terms. After the features are tested against the current threat states patterns will emerge to reveal a list of potential state BW threats towards the United States in the future.

### *Population Selection*

The historical group was selected based on literature and reporting that those states had confirmed BW programs after 1969<sup>81</sup>. Table 1 below provides states and the years they ran their BW programs:

**Table 1**

<b>State</b>	<b>Program Start/End Dates</b>
Soviet Union (Russia)	1926 - 1992
Iraq	~1970 - 1995
South Africa	1981 - 1993

The non-signatory states to the BWC (non-participatory states to the BWC) and the non-ratifying states are listed in Table 2<sup>82</sup>:

<sup>81</sup> "CNS - Chemical and Biological Weapons: Possession and Programs Past and Present." James Martin Center for Nonproliferation Studies (CNS). <http://cns.miis.edu/cbw/possess.htm> (accessed May 12, 2013).

<sup>82</sup> "The United Nations in the Heart of Europe | Disarmament | Membership of the Biological Weapons Convention." The United Nations in the Heart of Europe. [http://www.unog.ch/\\_80256ee600585943.nsf/\(httpPages\)/7be6cbbbea0477b52c12571860035fd5c?OpenDocument#\\_Section1](http://www.unog.ch/_80256ee600585943.nsf/(httpPages)/7be6cbbbea0477b52c12571860035fd5c?OpenDocument#_Section1) (accessed May 12, 2013).

**Table 2**

<b>Non-Signatory</b>	<b>Non-Signatory</b>	<b>Non-Ratifying</b>
Andorra	Mauritania	Central African Republic
Angola	Micronesia	Côte d'Ivoire
Chad	Namibia	Egypt
Comoros	Niue*	Haiti
Djibouti	Samoa	Liberia
Eritrea	South Sudan*	Myanmar
Guinea	Tuvalu	Nepal
Israel		Somalia
Kiribati		Syria
Marshall Islands		Tanzania

\* - These states were excluded from the end results because no data was available across the majority of datasets.

The states deemed to be “high-risk” or threat states for WMD by the yearly DNI reports are seen in Table 3<sup>83</sup>:

**Table 3**

<b>Threat States</b>
China
Iran
Libya
North Korea
Russia

#### *Limitations/Delimitations For Datasets*

There are many delimitations and limitations surrounding this study. The limitations of the study are as follows:

- Lack of international datasets that were available for the majority of countries to be analyzed.
- Lack of datasets that were current (ending in 2013).
- Some state data may have been incorrectly reported, especially given the “rogue” behavior of some states that were analyzed.

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<sup>83</sup> "Finder Results: 721 Reports." Office of the Director of National Intelligence.  
<http://www.dni.gov/index.php/finder-results?q=721+Reports> (accessed May 12, 2013).

- Gaps in data for some datasets existed, therefore averages were estimated and the year of “last reported data” was used as the most up-to-date information for a state.

There are also many delimitations to the study that are as follows:

- The time span for features tied to the rogue BW states was kept to a 10-year span (1983 to 1993) in order to make sure data was pulled from a time period that all three states were actively running their BW programs. Approximations were made by the author for a few dates in order to keep results consistent. The same source for program dates was also used.
- States that do not fall under the three categories (non-signatory, non-ratifying, and threat) were not analyzed due to a lack of available time. It could be argued that even states that belong to the BWC could be engaging in rogue BW activities. This is an ideal area for further research.
- The “threat” countries discussed in the final section of the paper are gauged as threats to the United States, and not the global community as a whole. While many of these nations would be perceived as “threat” countries to other members of the international community, it is important to note that this paper is written for the perspective of the United States’ national security.

#### *Benign and Threatening State Features Analyzed*

The following state features were used to analyze state behavior. Datasets were found for each feature to provide detailed analysis of patterns and correlations. Specific scaling for each feature will be addressed later on in the paper.

- Type of Government
  - Measures the level of democracy within a state on a given year.
  - Democracy is defined by “the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders”, “the existence of institutionalized constraints on the exercise of power by the executive”, and “the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation.”<sup>84</sup>
  - Democracy “rating” is based on a scale from 0-10 (0 meaning no democracy present, and 10 meaning a democratic government).
  - Most recent reporting year is 2012.
  - Feature chosen to determine if less democratic states could correlate with possible BW program development.
- Gross Domestic Product (GDP)
  - Measured in U.S. dollars and is the “sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.”<sup>85</sup>
  - Calculated on a per year basis.
  - Most recent reporting year is 2012.

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<sup>84</sup> "Polity IV Project: Home Page." Center for Systemic Peace: Home Page.  
<http://www.systemicpeace.org/polity/polity4.htm> (accessed March 12, 2014).

<sup>85</sup> "GDP (current US\$) | Data | Table." Data | The World Bank.  
<http://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (accessed March 12, 2014).

- Feature chosen to determine if states with a higher GDP would shy away from rogue behavior such as developing BW due to their strong economic ties in the international community.
- Freedom of the Press Rating
  - Measures how “free” press is within each state. This measurement spans three outcomes, “Not Free” [NF], “Partially Free” [PF], and “Free” [F]. These ratings are measured using “methodology questions” and “indicators divided into three broad categories: the legal environment, the political environment, and the economic environment.”<sup>86</sup> These categories are all concentrated on the press aspect of the society.
  - A minor limitation with this database is that for the years 1983 to 1988, the overall press status was not given, only the press ratings for print and broadcast media. For this study the print rating was used when the overall rating was unavailable.
  - Most recent reporting year is 2012.
  - Feature chosen to determine if freedom within the press could deter a state from engaging in rogue behavior, possibly out of fear that its actions would be discovered and reported by a media element that they are unable to control.
- Religion Percentage
  - Measures the total percentage of a state’s population that practices religion in general. The sources varied from “census-based data, to specific

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<sup>86</sup> "Freedom of the Press | Freedom House." Freedom House. <http://www.freedomhouse.org/report-types/freedom-press> (accessed March 12, 2014).

estimates of religious groups, or specific sources that focused on a given religion in a longitudinal manner.”<sup>87</sup>

- One minor limitation for this dataset is that data is only provided every half-decade (ex. – 1985, 1990, 1995, etc).
  - Most recent reporting year is 2010.
  - Feature chosen to determine if states that are historically against organized religion could be more likely to engage in rogue BW behavior.
- Political Terror Rating
    - Measures ‘levels of political violence and terror that a country experiences in a particular year based on a 5-level “terror scale”’, compiling data from the U.S. State Department Country Reports on Human Rights Practices and the yearly country reports of Amnesty International.<sup>88</sup>
    - A “Level 1” describes a state where “under a secure rule of law, people are not imprisoned for their views, and torture is rare or exceptional. Political murders are extremely rare.”<sup>89</sup>
    - A “Level 5” describes a state where “terror has expanded to the whole population. The leaders of these societies place no limits on the means or thoroughness with which they pursue personal or ideological goals.”<sup>90</sup>

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<sup>87</sup> "World Religions." COW Home Page.

<http://www.correlatesofwar.org/COW2%20Data/Religion/Religion.htm> (accessed May 13, 2013).

<sup>88</sup> "Political Terror Scale : Download Data." Political Terror Scale : Home.

<http://www.politicalterrorscale.org/download.php> (accessed March 12, 2014).

<sup>89</sup> Ibid.

<sup>90</sup> Ibid.

- A delimitation for this dataset is the variability of the scaling for the Amnesty International data and U.S. State Department data. For this study, the ratings used were derived from the U.S. State Department data.
- Most recent reporting year is 2012.
- Feature chosen to determine if states that have a high terror rating are more likely to engage in other “socially unacceptable” behaviors such as BW development.
- Arms Transfers Received
  - Measures number of arms imports received by a country in a given year.
  - Arms are classified as “military equipment” and “those that are produced or assembled under license or production is undertaken following the transfer of technology necessary for the production of military equipment (licensed production).”<sup>91</sup>
  - Sources range from media accounts to defense budget documents.
  - Most recent reporting year is 2011.
  - Feature chosen to determine if states that received high numbers of arms could be more likely to embrace other forms of warfare, such as the development of BW.
- Infant Mortality
  - Measures the infant mortality rate per 1,000 live births per country.<sup>92</sup>
  - Most recent reporting year is 2012.

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<sup>91</sup> "SIPRI Arms Transfers Database — [www.sipri.org](http://www.sipri.org)." Welcome to SIPRI — [www.sipri.org](http://www.sipri.org). <http://www.sipri.org/databases/armstransfers> (accessed May 13, 2013).

<sup>92</sup> "Mortality rate, infant (per 1,000 live births) | Data | Table." Data | The World Bank. <http://data.worldbank.org/indicator/SP.DYN.IMRT.IN?page=5> (accessed March 12, 2014).

- Feature chosen to determine if states with mid-range infant mortality rates could be more likely to develop a BW program, given that they neither rate exceedingly high in scientific advancement nor are they a struggling developing nation.
- Science and Technical Journal Articles
  - Measures the number of “scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences.”<sup>93</sup>
  - Limitations for this dataset are that the majority of the data is restricted to the years 1985 to 2009 and reporting for Russia is only available for 1992 and 1993.
  - Feature chosen to determine if more scientifically advanced states could be more likely to develop BW, given their strong scientific infrastructure within the state.

### **Understanding Historical State BW Programs**

In order to understand future BW threats to the United States it is important to understand what lead to the rogue programs used as the historical group in this study: Russia (USSR), Iraq, and South Africa. The history of these programs may help shed light on issues that may have been “red flags” for the international community as a whole. Specific methodological approaches to identifying BW programs could not be

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<sup>93</sup> "Scientific and technical journal articles | Data | Table." Data | The World Bank. <http://data.worldbank.org/indicator/IP.JRN.ARTC.SC?page=4> (accessed May 13, 2013).



found during the literature review process. The majority of scholarly work centered around non-state threats, and not state-centered threats, as explored by this study.

It is important to note that all three of the BW programs discussed below took place during wars, both internal and external. Each of the states were experiencing internal and external pressures, some of which only furthered their respective programs. Unfortunately, a comprehensive study on the detection of state run BW programs, in terms of future threats, could not be located. The majority of scholarly articles discussed how these programs, that all took place when the BWC was enacted, could have been flagged through a “verification” protocol of the BWC. Given that a verification protocol still has not been adopted, and is not supported by the U.S., a method of detecting future BW threats is even more pressing and pertinent to this field of study. In total, a brief overview of the three programs will be provided in order to provide adequate background knowledge for the topic, given there is a lack of literature to predict this type of threat.

#### *The Soviet (Russian) BW Program*

The Soviet BW program began much earlier than any of the other programs discussed in this study. From the 1920s, the Soviets built the largest BW program in the world and the denunciation of BW by the United States and Britain had no effect on their activities. When the United States halted their program in 1969, the Soviets did not believe that this had actually taken place, and continued their program under the belief that the United States was still producing offensive BW.<sup>94</sup> During this time period, the Soviets ran their program under two main components: the Ministries of Defense and Agriculture and the other “under an ostensibly civilian pharmaceutical development and

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<sup>94</sup> Eric Croddey, *Chemical and Biological Warfare: A Comprehensive Survey for the Concerned Citizen*, New York: Copernicus Books, 2002, 35.

production complex known as Biopreparat.”<sup>95</sup> Under these programs the Soviets explored the weaponization of the causative agents for smallpox, anthrax, and the plague, even after they had signed and ratified the BWC.<sup>96</sup>

The international community was unaware of the continued activities of the Soviets until 1989, when Soviet defector Vladimir Pasechnik gave an immense amount of details to Britain and the United States regarding the continuing BW activities of the Soviets. The U.S. had believed since 1984 that the Soviets may have held an offensive program but their suspicions were realized with the defection of Pasechnik.<sup>97</sup> In 1989, the United States and Britain questioned Soviet President Mikhail Gorbachev about the BW program. Gorbachev expressly denied that such a program existed.<sup>98</sup> Even after the collapse of the Soviet Union, the program continued. In 1992, Russian President Boris Yeltsin admitted that the USSR had “experienced a lag in implementing” the BWC and in 1993 the United States could not conclude if the program had continued.<sup>99</sup> After the admission of the BW program, Russia entered into a Trilateral Agreement with the U.S. and Britain to ensure that all three states were in compliance with the BWC. Visits to all three states were carried out in the 1990s but beliefs were still held that the Russians were maintaining their production means for BW, but that has been dealt with diplomatically at this point.<sup>100</sup>

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<sup>95</sup> Joseph Cirincione, Jon B. Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats*, 2nd ed, Washington, D.C.: Carnegie Endowment for International Peace, 2005, 61.

<sup>96</sup> Croddy, *Chemical and Biological Warfare*, 35.

<sup>97</sup> Michael Moodie, "The Soviet Union, Russia, and the Biological and Toxin Weapons Convention," *The Nonproliferation Review* Spring (2001): 61.

<sup>98</sup> Croddy, *Chemical and Biological Warfare*, 34.

<sup>99</sup> *Ibid.*, 34.

<sup>100</sup> Moodie, "The Soviet Union, Russia, and the Biological and Toxin Weapons Convention," 63.

### *The Iraqi BW Program*

The Iraqi government signed the BWC in 1972 but in the late 1970s they began their BW program, and started their “research and development” phase officially in the 1980s.<sup>101</sup> The Iraqi program produced many different agents, including the causative agents for anthrax, botulism, and ricin and moved onto the weaponization phase around 1990.<sup>102</sup> The government utilized production sites at Salman Pak, al Muthanna, and the largest, at Al Hakam. Intelligence agencies knew of the first two sites but were unaware of the Al Hakam site until the defection of Saddam’s brother-in-law, General Hussein Al-Kamal, in 1995.<sup>103</sup> The Iraqi government admitted to possessing a BW program in 1995 and a few years later all of the production sites had been demolished.<sup>104</sup> U.S. reports note that it is believed the Iraqi government was vague about continued possession of BW after 1995, in order to deter Iran. There are conflicting reports about whether the Iraqi government disposed of their BW stockpile completely after 1995, but U.S. government reports note that production ceased after 1995.<sup>105</sup>

### *South African BW Program*

In the 1980s the apartheid South African government started an offensive BW program, aimed at promoting the already oppressive apartheid government though targeted assassinations, sterility vaccinations, and killing of black troops in Rhodesia.<sup>106</sup> The program was named Project Coast and many different agents were developed,

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<sup>101</sup> Croddy, *Chemical and Biological Warfare*, 40.

<sup>102</sup> Cirincione, Wolfsthal, and Rajkumar, *Deadly Arsenals*, 346.

<sup>103</sup> Ibid., 346.

<sup>104</sup> Cirincione, Wolfsthal, and Rajkumar, *Deadly Arsenals*, 348.

<sup>105</sup> U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements and Commitments*, Washington, D.C.: 2005, 24.

<sup>106</sup> "What Happened In South Africa? | Plague War | FRONTLINE | PBS." PBS: Public Broadcasting Service. <http://www.pbs.org/wgbh/pages/frontline/shows/plague/sa/> (accessed May 12, 2013).

including the weaponization of the causative agent for anthrax.<sup>107</sup> The creator of the program, Dr. Wouter Basson, a “former Special Forces Army Brigadier and personal heart specialist to former President P.W. Botha”, spearheaded much of South Africa’s CBW activity during this time period.<sup>108</sup> The program was reportedly disbanded in 1993, with the fall of the apartheid government.<sup>109</sup> Project Coast remained undiscovered until the 1998 South Africa's Truth and Reconciliation Commission hearings were held concerning activities of the apartheid government.<sup>110</sup>

### **Features of Historical State BW Programs**

The following tables represent the data outcomes for each feature, in regards to the three rogue BW states (historical group), from years 1983 to 1993. Averages for each country in their respective dataset are provided after each table, along with a High-Low scale. This High-Low scale will be used to rate the 32 potential future threat states (non-signatory, non-ratifying, threat). By identifying states that are within the High-Low range for a majority of the datasets (five or more), it may be possible to focus in on states that could be future BW threats to the United States.

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<sup>107</sup> Cirincione, Wolfsthal, and Rajkumar, *Deadly Arsenals*, 413.

<sup>108</sup> "What Happened In South Africa? | Plague War | FRONTLINE | PBS."

<sup>109</sup> Cirincione, Wolfsthal, and Rajkumar, *Deadly Arsenals*, 413.

<sup>110</sup> "What Happened In South Africa? | Plague War | FRONTLINE | PBS."

**Table 4: Type of Government (Democracy Rating)**

Year	Iraq	Russia (USSR)	South Africa
1983	0	0	7
1984	0	0	7
1985	0	0	7
1986	0	0	7
1987	0	0	7
1988	0	0	7
1989	0	1	7
1990	0	3	7
1991	0	3	7
1992	0	5	-*
1993	0	4	-*
<b>Average</b>	<b>0</b>	<b>1.455</b>	<b>7</b>
<b>High-Low Scale: 7-0</b>			

\*- Due to transition of the government, a rating could not be determined for these years

The type of government, or democracy rating, feature in Table 4 reveals a pattern in Table 4 that states with no democracy to moderate levels of democracy could be potential BW state threats to the United States. This would mean that full democracies could be less likely to be considered as a possible BW threat in the future.

**Table 5: Gross Domestic Product (GDP)**

Year	Iraq	Russia (USSR)	South Africa
1983	37,495,016,505	-*	86,013,096,939
1984	42,530,668,954	-*	85,171,208,729
1985	44,204,431,807	-*	67,066,232,219
1986	39,991,570,164	-*	79,501,624,656
1987	43,702,264,739	-*	104,022,118,647
1988	43,410,815,201	-*	114,631,068,119
1989	48,422,432,259	506,500,146,307	124,908,313,647
1990	-*	516,814,258,695	112,013,934,433
1991	-*	509,381,638,906	120,225,332,339
1992	-*	460,205,414,725	130,513,031,862
1993	-*	435,060,123,490	130,405,965,477
<b>Average</b>	<b>42,822,457,090</b>	<b>485,592,316,425</b>	<b>104,951,993,370</b>
<b>High-Low Scale: 485,500,000,000 - 42,800,000,000</b>			

\*- No data available for these years

The Gross Domestic Product feature in Table 5 reveals a lack of data given government changes and conflict. Ultimately, the high-low range shows that moderate GDP amounts could signal the development of BW in a state. Historically, GDP levels will continue to rise over time, making it difficult to apply the High-Low range to current states but given that potential BW states could be slowly rising global economic powers, this High-Low range could very much be a good indicator of potentially rogue activity.

**Table 6: Freedom of the Press Rating**

Year	Iraq	Russia (USSR)	South Africa
1983	NF	NF	PF
1984	NF	NF	PF
1985	NF	NF	PF
1986	NF	NF	PF
1987	NF	NF	PF
1988	NF	NF	PF
1989	NF	NF	NF
1990	NF	NF	PF
1991	NF	PF	PF
1992	NF	PF	PF
1993	NF	PF	PF
Average	NF	NF	PF
High-Low Scale: NF - PF			

The Freedom of the Press feature in Table 6 reveals a High-Low range indicating that states with partially free to not free press could possibly produce BW. Restrictions on press freedom draws attention to the fact that a rogue BW state would most likely need control over its press or media to prevent reports on their rogue activities.

**Table 7: Religion Percentage**

Year	Iraq	Russia (USSR)	South Africa
1985	98.8	38.36	96.01
1990	98.22	36.04	95.93
<b>Average</b>	<b>98.5</b>	<b>37.2</b>	<b>96</b>
<b>High-Low Scale: 98.5 – 37.2</b>			

The percentage of religious individuals in a state feature in Table 7 reveals a very large range, given the inclusion of the communist USSR. Overall, states with a very high percentage of religious citizens could possibly indicate a state religion and would therefore fall outside of this High-Low range. The range seen with religion percentage appears to not reveal a solid pattern for potential state BW threats.

**Table 8: Political Terror Rating**

Year	Iraq	Russia (USSR)	South Africa
1983	5	3	2
1984	4	2	3
1985	5	2	4
1986	4	3	5
1987	4	4	5
1988	5	2	5
1989	4	2	4
1990	5	3	4
1991	5	4	4
1992	5	3	4
1993	5	3	5
<b>Average</b>	<b>4.63</b>	<b>2.81</b>	<b>4.09</b>
<b>High-Low Scale: 4.63 – 2.81</b>			

The Political Terror Rating feature in Table 8 reveals that a rogue BW state would rate moderate to high on the Political Terror scale. Ideological beliefs of the leaders of these types of states tend to take precedence over the safety and security of their people. States that are a “5” on the scale are not included however, possibly given that full government repression would not breed an adequate environment for BW activities.

**Table 9: Arms Transfers Received**

Year	Iraq	Russia (USSR)	South Africa
1983	3330	732	225
1984	4637	915	123
1985	4063	1003	26
1986	3622	1389	211
1987	3685	1542	16
1988	1923	1618	7
1989	1478	1205	13
1990	775	688	13
1991	-*	132	27
1992	-*	40	363
1993	-*	-*	244
Average	2939	926	115
High-Low Scale: 2939 - 115			

\*- No data available for these years

The arms transfers received feature in Table 9 reveals a fairly large range of results. States heavily engaged in conflicts, internal and external, could fall into the target range of potential BW threats. It is also important to note that the arms transfers, as referred to in the dataset, are official. There are arguably a large amount of arms transfers that could take place on the black market, especially if the amount of conflict in the state is high. Generally, states that are not dealing with internal conflict and/or are not engaged with an external conflict could be less likely to develop a BW program.



**Table 10: Infant Mortality**

Year	Iraq	Russia (USSR)	South Africa
1983	44.6	25.8	59.8
1984	42.6	25.3	57.6
1985	40.9	24.8	55.5
1986	39.6	24.4	53.5
1987	38.7	24	51.7
1988	37.8	23.7	50.1
1989	37.1	23.3	48.9
1990	36.7	23	48.2
1991	36.3	22.6	47.6
1992	36.2	22.3	47.2
1993	36.2	22	47
<b>Average</b>	<b>38.8</b>	<b>23.8</b>	<b>51.6</b>
<b>High-Low Scale: 51.6 – 23.8</b>			

The infant mortality rate feature in Table 10 reveals moderately low to moderate rates as a possible indicator of BW program activity. Highly developed states with extremely low mortality rates could seemingly fall out of the threat range while developing states with extremely high rates could indicate that the rate of development would be at an inadequate level for BW program development.

**Table 11: Science and Technical Journal Articles**

Year	Iraq	Russia (USSR)	South Africa
1983	_*	_*	2025
1984	_*	_*	2653
1985	_*	_*	2670
1986	222	_*	2523
1987	187	_*	2499
1988	225	_*	2406
1989	232	_*	2552
1990	164	_*	2419
1991	81	_*	2377
1992	79	817	2025
1993	74	19,659	2653
<b>Average</b>	<b>158</b>	<b>10,238</b>	<b>2437</b>
<b>High-Low Scale: 10,238 - 158</b>			

\*- No data available for these years

The science and technical journal articles feature in Table 11 reveals a large scale for the number of articles in the threat range. While there are a considerable number of years that data was missing for the USSR, the overall trend reveals that a state that is most likely at risk of producing BW could have a history of scientific research and/or the scientific community infrastructure to even begin to produce something as technical as BW. The dramatic uptick in Russian journal articles drafted during the transition to a democratic government in the early 1990s demonstrates that the Russian scientific community did indeed possess the knowledge and skill to produce BW.

### **Identification of Possible Future Threats Using Historical Features**

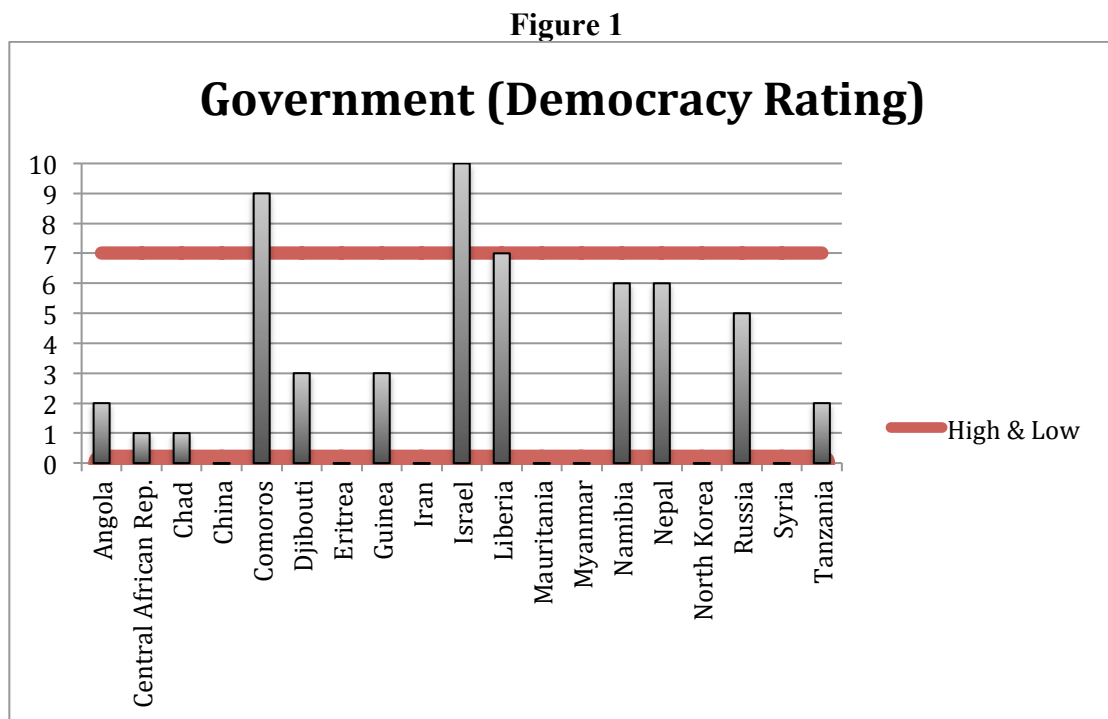
An analysis of results revealed that a total of four states fell within the High-Low target range for a majority (5 or more) of the features. These states have current conditions that mirror those in Iraq, Russian (USSR) and South Africa during the time when they all possessed offensive BW programs. The states came out of each of the historical state lists: non-signatory, non-ratifying and threat country. The results are seen in Table 12:

<b>Table 12</b>	
<b>Possible Future Threat States</b>	
	Israel
	Myanmar
	Egypt
	China

A detailed analysis of each feature dataset is provided below in order to explain the overall characteristics of a possible future state BW threat. The 32 states (non-signatory, non-ratifying, threat) that were pre-selected were rated on each feature for the most recent year data that was available. Some countries did not have any recent (within

the last four years) data reported for a particular feature, therefore those countries were excluded from those particular graphs.

Figure 1 contains the results for the democracy rating dataset. A total of 19 states had results reported.

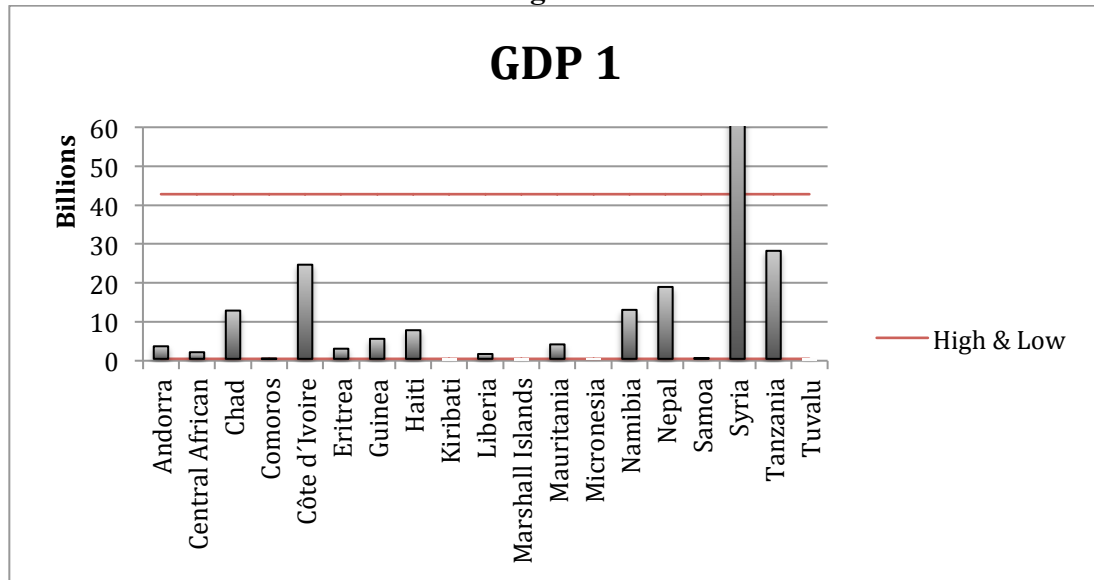


Of note for Figure 1, Egypt was not provided in the 2012 data due to the recent changes in government and the uncertainty of what the level of democracy was during 2012. The two other identified final threat countries, Myanmar and China, fell right into the target range while Israel rated at the top of the democracy scale. Given the known situation in Egypt in 2012, it is evident that there is a correlation with lower levels of democracy and a state being a potential future BW threat.

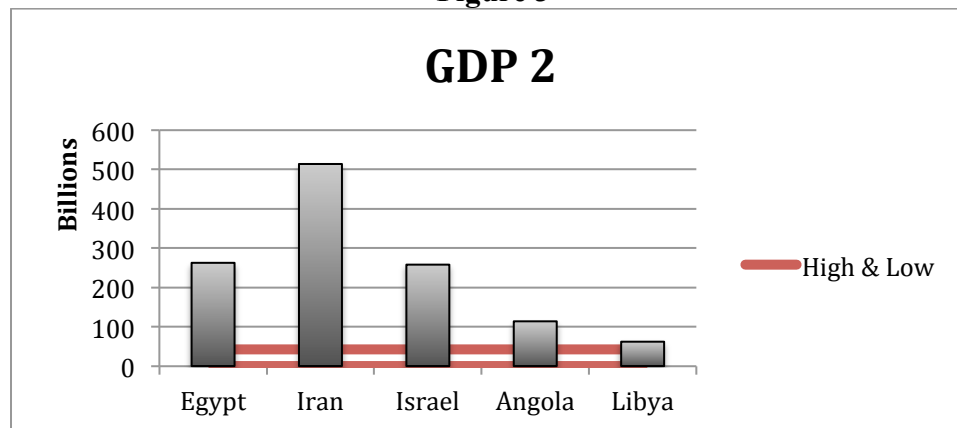
Figures 2 and 3 represent the results for the GDP dataset. A total of 26 states had results reported. The results are divided into two different figures due to the large scale of numbers. Of note, China (GDP \$ 8,227,102,629,831) and Russia (GDP \$

2,014,774,938,342) were not included due to the large difference between their numbers and those of the other states.

**Figure 2**

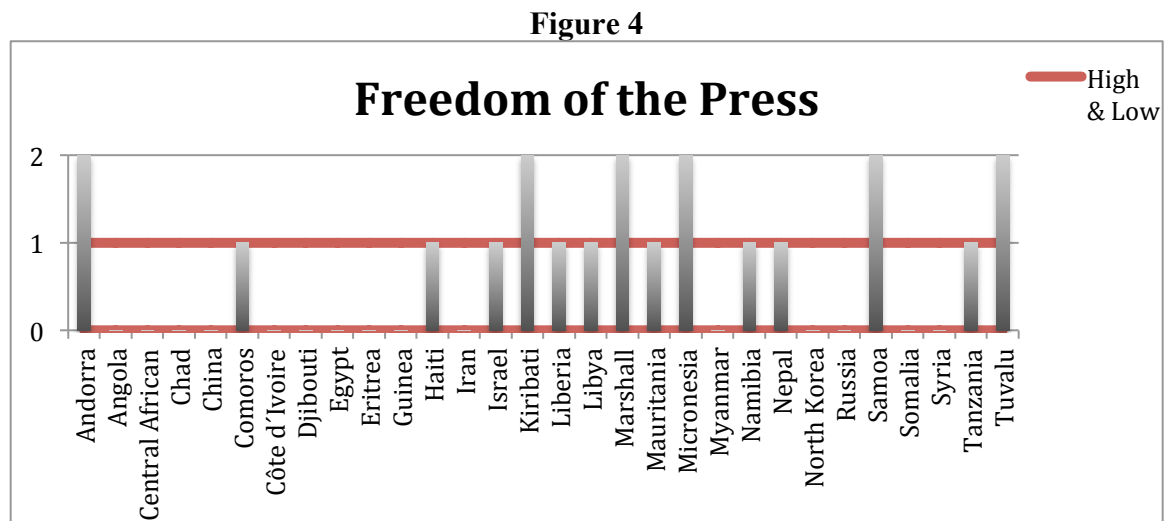


**Figure 3**



Of note for Figure 3, Myanmar did not have any recent GDP data reported and was left out of the graph. The other three final threat countries, Israel, Egypt, and China (which was too big to even graph) have GDP numbers well above the target range. After seeing where the final threat countries fall, there appears to be little to no correlation between the GDP of a state and their likelihood for being a future BW threat.

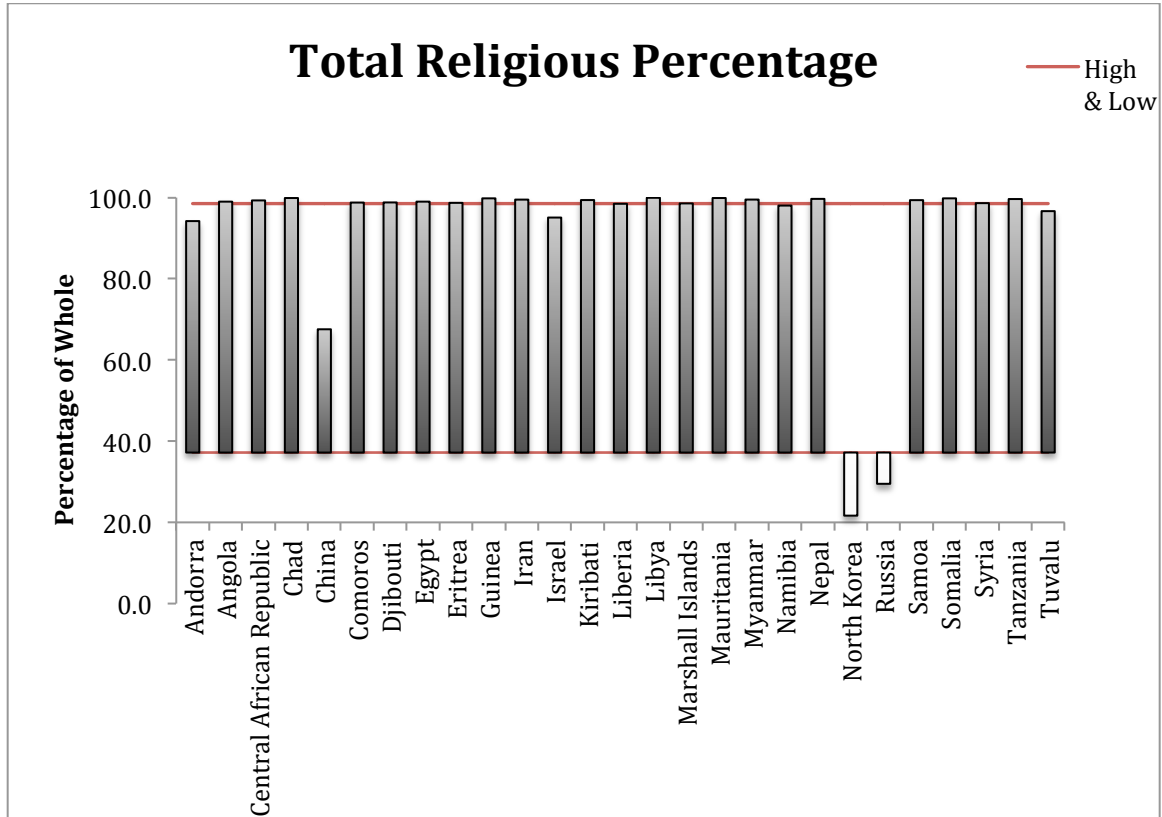
Figure 4 represents the results for the Freedom of the Press rating. A total of 30 states had results reported. A numerical scaling was established as follows: 0=Not Free (NF), 1=Partially Free (PF), and 2=Free (F).



All of the final threat countries are graphed for Figure 4 and they all fall within the target range for potential rogue BW behavior. Given the results for this feature, there appears to be a correlation between low press freedoms and a state's likelihood to present a BW threat to the United States.

Figure 5 represents the results for the total amount of a state's population that practices religion. A total of 28 states had results reported. Of note, Haiti was not graphed due to its unique result (135%), which is most likely due to the amount of missionary activity that takes place in the state.

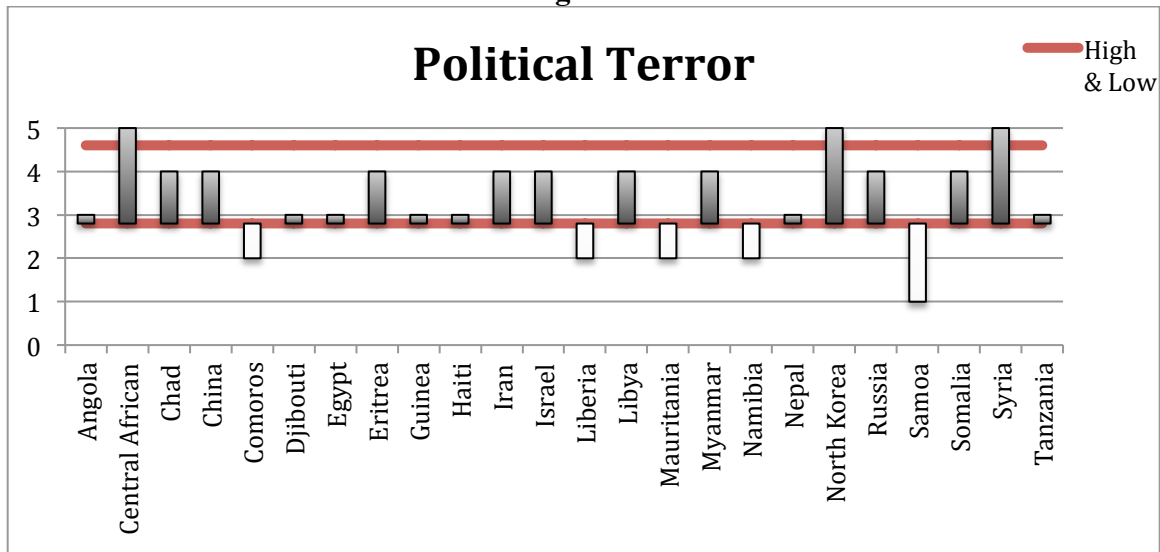
Figure 5



Many of the results for the religious percentage hover right around the target range. Although the numbers are extremely close, Myanmar (99.5%) and Egypt (99%) are above the target “High” of 98.5%. Israel and China fall right into the target range. Given that the majority of final threat states did not fall into the target range, no correlation appears between high levels of a population subscribing to a religion and an increased likelihood that the state will engage in rogue BW behavior.

Figure 6 represents the results for the Political Terror Rating dataset. A total of 24 states had results reported.

Figure 6



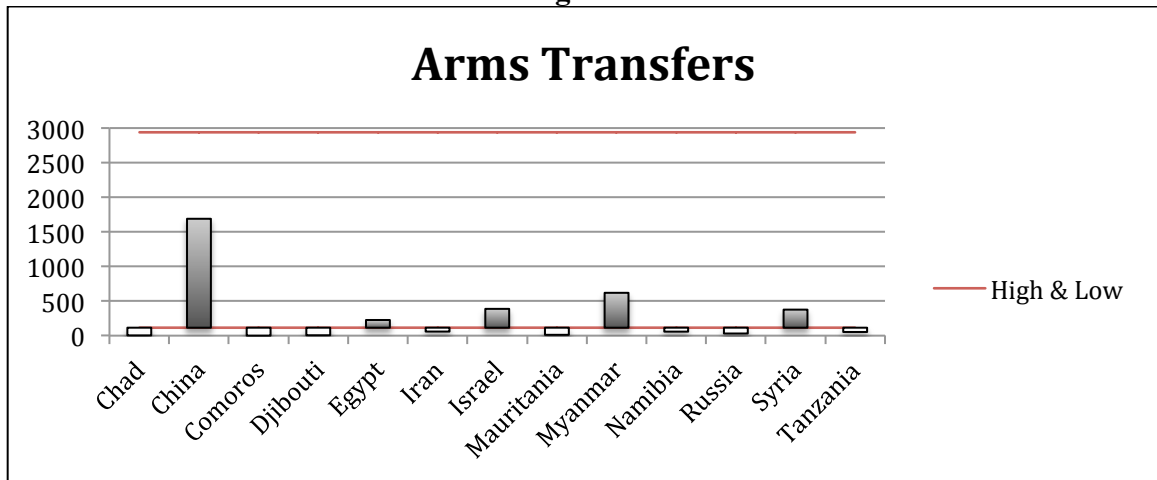
All four of the final threat countries are graphed above and they all fall into the threat range for political terror. China, Israel, and Myanmar all rate relatively high on the terror scale (4) and according to the codebook for the dataset the following features are likely for these states: “Civil and political rights violations have expanded to large numbers of the population. Murders, disappearances, and torture are a common part of life. In spite of its generality, on this level terror affects those who interest themselves in politics or ideas.”<sup>111</sup> Egypt rated as a 3, which means that “there is extensive political imprisonment, or a recent history of such imprisonment. Execution or other political murders and brutality may be common. Unlimited detention, with or without a trial, for political views is accepted.”<sup>112</sup> Overall, there appears to be a correlation between high political terror levels and a state’s likelihood to be a possible future state BW threat.

Figure 7 represents the results for the total number of arms transfers per state. A total of 13 states had results reported.

<sup>111</sup> "Political Terror Scale : PTS Data." Political Terror Scale : Home.  
<http://www.politicalterroryscale.org/ptsdata.php> (accessed March 12, 2014).

<sup>112</sup> Ibid.

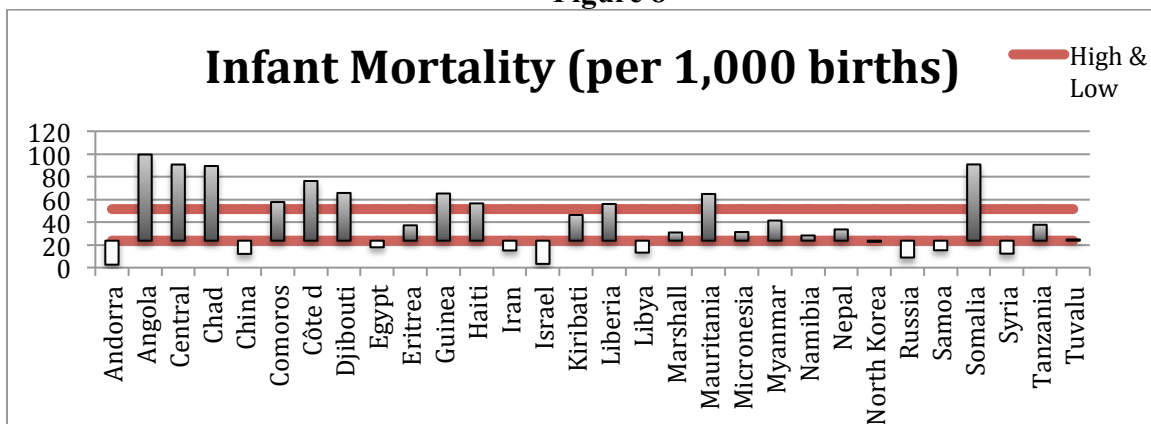
Figure 7



All four final threat states are graphed for arms transfers received and they all fall within the target range. Given that they all fall into this range, it appears there is a correlation between moderate levels of received arms transfers and a state's likelihood to present a BW threat to the United States in the future.

Figure 8 represents the infant mortality rate per 1,000 births per state. A total of 30 states had results reported.

Figure 8

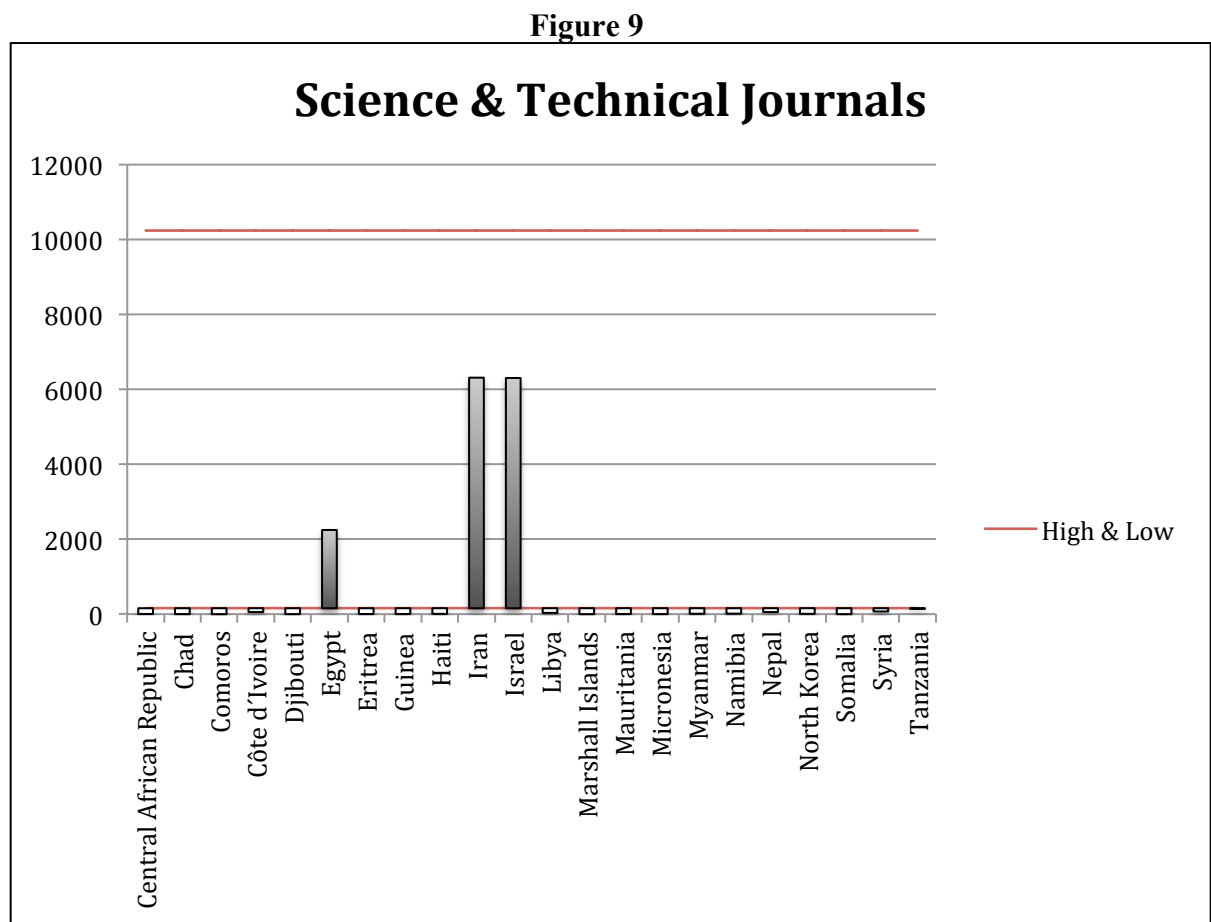


Only one of the final threat states falls within the target range for infant mortality rates. Given that the other three final threat states have considerably lower rates, no



correlation exists between higher infant mortality rates, which could arguably be an indicator for overall development, and a state becoming a possible future BW threat.

Figure 9 represents the total number of science and technical journals produced per state. A total of 24 states had results reported. Of note, Russia (14,016.2) and China (74,019.2) were not graphed due to the large difference between their numbers and those of the other states.



Of note for Figure 9, China is not graphed due to its extremely high journal articles produced (~74,000). Myanmar does not fall within the target range, along with China. Israel and Egypt do fall within the target range but given that the majority of final

threat states are not within range, the production level of science and technical journals does not show a correlation with possible future state BW threats.

## **Conclusion**

The results of this study revealed that the formulation did identify countries that may be a threat to the United States in the future, concerning BW. The final threat states were identified as China, Egypt, Israel and Myanmar. Overall, these final threat countries revealed the following patterns for possible future BW threats: lower levels of democracy, lower press freedom ratings, high political terror ratings, and moderate levels of received arms transfers. After analyzing these features and patterns it could be argued that high political terror ratings and moderate levels of received arms transfers hold the strongest correlation to rogue BW state behavior. Terror ratings reveal the overall internal security situation of a state while arms transfer levels not only reveal the internal but also the external security situation. High levels of external and internal conflicts were noted for all three of the historical states during the time periods when they had bioweapons programs. The research also revealed that while it was hypothesized that the following features would prove to present BW patterns, they in fact did not: GDP amounts, percentage of people subscribing to religion, higher infant mortality rates, and the production levels of science and technical journals.

All in all, without follow-up reports that these countries do in fact have BW programs, it is impossible to tell if the methodology was successful. This study does provide a blueprint for future analysis in the field, regarding a variety of state-centered threats. In the future, it would be ideal to also factor in conflict-based datasets as well as those tied to pharmaceutical production levels, once they have been updated to a more

recent date. It is possible that these datasets could provide even more insight into patterns surrounding BW state threats. It is also important to note that two of the states, Egypt and Myanmar, have undergone major internal changes in the last few years, which could be seen as a mirroring of the situation in Russia (USSR) concerning their BW program. The inclusion of Israel was not expected but sheds light on the fact that the methodology used did not simply bring up states that have been in contention with the U.S. or global security norms. China, which is considerably larger than the other final threat states, has become more relevant to U.S. security in the past few years and could possibly be vying to expand its powers in “unconventional” ways. In conclusion, the threat of offensive state BW programs may no longer be the “popular” issue of the moment, but studies such as this could provide an important blueprint to ensure the United States can adequately protect itself from possible future state threats.

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### **Chapter 3: Motivations Behind the U.S. VEREX Rejection and What the Future Holds for the Biological Weapons Threat on a Global Scale**

The introduction of the Biological Weapons Convention (BWC) to the international community ushered in a new era for international regimes. The BWC came at a time when large powers were actively and aggressively pursuing their own biological weapons (BW) programs. The United States was a strong supporter of the loosely structured regime and encouraged open international communication concerning the future directions of the policy. Right before the 9/11 and anthrax attacks of 2001, the U.S. stance on the BWC changed dramatically. Gone were the days of building up a compliance regime and verification protocol to ensure states were not violating the BWC. The United States issued a stark warning to the rest of the international community that they would not allow an international regime to encroach on their sovereign rights, among those - their responsibility to protect their proprietary information and biomedical research.

A major point of contention for the United States has been the dual-use issue of the BWC, the argument that much of BW technology and agents can be used for legitimate and illegitimate purposes. The dual-use issue and pending verification protocol led the United States to halt all negotiations concerning the BWC, sending negotiations back almost 10 years. Since the 2001 negotiation breakdown the United States has softened its approach to the verification and compliance issues but has stood firm that it will not sign off on an additional protocol. This refusal to accept the protocol could be seen as a notch in the belt of the growing refusal by the United States to sign onto arms treaties and agreements since 2001. It could also be indicative of other major signatories

such as Russia and China remaining mum on verification procedures, much to the suspicion of U.S. officials.

This paper asks why the United States has refused to sign onto the verification protocol considering their track record with signing international arms agreements and their pre-2001 push for a verification protocol for the BWC. The background of the BWC, including the verification and dual-use issues, will be analyzed and discussed along with the U.S. refusal of the verification protocol and their publicized reasons for the refusal. An overview of the role of international regimes from the perspective of the United States will be analyzed as well as the more specific positions taken by the United States on arms treaties and agreements. Case studies of China and Russia's stance on the BWC verification protocol will be analyzed in order to attempt to provide insight into the policy decisions of the United States concerning the protocol. The history of the United States and international agreements, partnered with the case studies of other states within the BWC, reveals potential answers as to why the United States has shied away from the verification protocol while the threat of bioterrorism continues to grow. Lastly, possible future policy directions for the United States will be discussed as alternatives to a verification protocol of the BWC.

Ultimately, the United States refusal of the BWC verification protocol, VEREX, appears to have been greatly influenced by the statements and actions of other BWC participating states like Russia and China. The actions and reactions of Russia and China have most likely over-ridden the U.S. desire for VEREX, dating back to pre-2001, and the general historical pattern of the United States signing onto arms agreements. These states pose a threat to U.S. sovereignty as a whole as well, leading the United States to



take measures to protect itself. Through analysis it becomes clear that VEREX should be taken off the radar for U.S. policy options but other credible solutions, mainly being national based initiatives, are on the horizon for the United States to deal with the threat of bioterrorism on a global scale.

## **Background of the Biological Weapons Convention**

### *History of the Biological Weapons Convention*

The aftermath of World War I brought about a strong desire from the international community to ban certain chemicals and toxins from ever being involved in modern warfare again. The 1925 Geneva Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and Bacteriological Methods of Warfare was negotiated at the League of Nations. This ban on chemical weapons and BW soon became an international norm but states, including France and the United States, saw a need for a more overarching agreement that would also ban the production and stockpiling of these weapons.<sup>113</sup> At the time of the BWC adoption in the early 1970s, there were two primary parties with an interest in BW. These key players were militaries, who were “concerned about encountering them on the battlefield” and diplomats who sought to ban the weapons through the use of an international treaty.<sup>114</sup> The short policy text seemed to suffice at a time when the 1925 Geneva Protocol was the only international agreement for BW use. Sometimes referred to as a “toothless wonder,” the BWC lacked the “key components of effective arms treaties: transparency, power of inspection, verification,

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<sup>113</sup> Dan Caldwell and Robert E. Williams, *Seeking security in an insecure world*, Lanham, Md.: Rowman & Littlefield Publishers, 2006, 78-9.

<sup>114</sup> Gerald Epstein, "Biosecurity 2011: Not a year to change minds," *Bulletin of the Atomic Scientists* 68, no. 1 (2012): 32.

and enforcement.”<sup>115</sup> The now 159 State Parties and 15 Signatory States make up the core of this policy regime and they rely on the “Review Conferences” to improve on this generic regime.

When the BWC was adopted, one of its Articles, Article XII, stated that the conference had to meet every five years to “review its operation, relevant scientific and technological developments, as well as progress towards the negotiation of a convention to prohibit the development, production, stockpiling and use of chemical weapons.”<sup>116</sup> The very first Review Conference met in March of 1980, thus beginning the process of setting more specific regime rules for participating and signing states to abide by. While some argue that the “slender” text of the BWC leaves too many open opportunities for non-compliance, others argue that the Review Conference setup enables states to build upon the policy regime, slowly. This slow buildup of regime norms and rules, in turn, creates a consensus among those signing states.<sup>117</sup>

The classic Review Conference structure that was used for decades was turned upside-down during the last day of the July 2001 conference when the U.S. representative, John Bolton, stated that the United States would not sign on to the verification procedures that were to be introduced by the Ad Hoc group of the BWC. The terms of this dismissal and breakdown of negotiations will be discussed later in this paper. During this dramatic Fifth Review Conference, all findings were suspended and many elements were sent back to the drawing board. In 2002 the Review Conference reconvened and the participating states were weary and cautious about proposing any

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<sup>115</sup> Laurie Garrett, *Betrayal of trust: the collapse of global public health*, New York: Hyperion, 2000, 503.

<sup>116</sup> United Nations, "Biological Weapons Convention Background Info," United Nations Office at Geneva, [www.unog.ch/bwc](http://www.unog.ch/bwc) (accessed November 4, 2012).

<sup>117</sup> Nicholas Sims, "A simple treaty, a complex fulfillment: A short history of the Biological Weapons Convention Review Conferences," *Bulletin of the Atomic Scientists* 67, no. 3 (2011): 10.

new negotiations. A medium was established in the form of the “Intersession” where states could openly discuss issues related to the BWC in-between review conferences.<sup>118</sup> While it has been highly successful, the fear of repetition, leading to less effectiveness, is one of the biggest hurdles for the renewal of the Intersessions.<sup>119</sup> One of the most pressing issues discussed in these Intersessions concerns the struggle between science and security, the dual-use dilemma.

### *The Dual-Use Issue*

The majority of the topics discussed in the early Review Conferences (1980 and 1986) leaned towards establishing basic structures for the BWC in terms of state coordination and agreement on the treaty phrasing. During the 1991 Third Review Conference the dual-use issue took center stage for the first time. One of the major topics discussed was the need for documentation from states in support of Article X of the Convention. Article X states that “To do all of the above in a way that encourages the peaceful uses of biological science and technology.”<sup>120</sup> This need for further explanation also came about in terms of biodefense programs.<sup>121</sup> States needed further clarification concerning whether the biodefense measures they had put into place actually violated the BWC, in terms of vaccines and stockpiles for medical testing. Confidence Building Measures (CBMs) were also enacted for the first time after being introduced in 1986. The CBMs were intended to “reduce the occurrence of ambiguities, doubts and suspicions,

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<sup>118</sup> Masood Khan, “The Second Intersessional Process,” in *Improving Implementation of the Biological Weapons Convention: the 2007-2010 Intersessional Process*, ed. Piers Millett (New York: United Nations, 2011), 13-4.

<sup>119</sup> Richard Lennane, “Building on Success: The Future of the Intersessional Process,” in *Improving Implementation of the Biological Weapons Convention: the 2007-2010 Intersessional Process*, ed. Piers Millett (New York: United Nations, 2011), 260.

<sup>120</sup> United Nations, “Biological Weapons Convention Background Info.”

<sup>121</sup> Sims, “A simple treaty, a complex fulfillment: A short history of the Biological Weapons Convention Review Conferences,” 12.

and improve international cooperation in the field of peaceful biological activities.”<sup>122</sup>

The dual-use issue is laden with ambiguities and misunderstandings but in order to gain a deeper understanding, the aspects of dual-use must be analyzed.

The dual-use issue is comprised of three main elements that require their own set of tools to battle. Element one is the fact that very often, those wishing to conceal the production or testing of BW use civilian facilities.<sup>123</sup> This illicit activity is banned by the BWC mainly for the reason that possessing weapons in the first place is illegal but also for the fact that it contradicts the very principles of peaceful biological activities, as stated in Article X. One primary example of this element of the dual-use dilemma was the use of facilities in the Soviet Union that were advertised as being used to conduct civilian research in the early 1970s. These “clandestine biological weapons facilities” were used to produce and test BW for use by the Soviet military. Dozens of these facilities were utilized around the Soviet Union to support the Soviet BW program while keeping the international community in the dark.<sup>124</sup> One other danger concerning the civilian facility usage is the fear that the biological strains could fall into the hands of a terrorist group. These “commercial” facilities, on the guise of being in the private sector, may not have the heightened security that an actual military facility would have.<sup>125</sup>

The second element of the dual-use dilemma is that equipment and biological agents are on one hand used for productive scientific research and on the other hand used for illicit BW production. Export controls are the only way to definitively limit the supply

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<sup>122</sup> United Nations, "Biological Weapons Convention Background Info."

<sup>123</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 277.

<sup>124</sup> Ibid., 278.

<sup>125</sup> Ibid., 279.

of biological equipment and pathogens to those whom you trust.<sup>126</sup> How does one determine whom to trust? The BWC is clear when it states that no one should be given access to research tools if their uses are not for peaceful purposes. The intention aspect of this element is the hardest to combat due to the fact that actors can go through great measures to ensure that their activities appear “legitimate”. Two national systems were created to monitor this issue: the Wassenaar Arrangement and the Australia Group system. These systems monitor the transfer of dual-use technology through export controls and are the strongest deterrents against biological equipment and agent misuse.<sup>127</sup> Long lists of BW pathogens and materials that can be used to produce it are flagged as requiring export controls, thereby creating a record of what actors are purchasing what elements. While the creation of these systems has helped tremendously with the issue of biological tech transfers in certain nations, no one solution can keep BW elements completely out of the hands of those who wish to cause harm.

The third element of the dual-use dilemma is the availability and use of scientific information for subversive activities, namely BW production. Committee reports on the BW topic have implied that this issue is of the highest concern regarding non-state actors’ ability to develop or purchase BW. Many have argued that the “peaceful uses” of certain BW technologies are only creating a security risk for the international community and that such peaceful uses do not exist. The case studies most strongly referenced for this argument are those of the former Iraq and South African BW programs, both of whom used open source information to produce BW. Others argue that putting physical security measures in place as well as biosafety measures will enable scientific information to flow

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<sup>126</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 280.

<sup>127</sup> Ibid., 280-1.

freely while protecting this proprietary information from those who wish to do us harm. Higher security screenings for labs and technicians is one of the ways this is enforced. Lastly, one of the other concerns about information availability is the publishing of scientific research that can be used for BW production. Some believe that research needs to be vetted for potential negative uses while others feel that this action will lead to a detrimental attack on free scientific knowledge and will slow scientific advances that are used for the good of mankind.<sup>128</sup> The dual-use issue overflows into many aspects of the BWC but most notably it is one of the central themes of the verification protocol.

#### *The Verification Protocol and the U.S. Refusal*

On the final day of the Fifth Review Conference of the BWC, in July 2001, the U.S. Secretary of State for Arms Control, John Bolton, brought the entire Conference to a halt with the declaration that the United States would not sign onto any findings made by the “Ad Hoc” group and would veto any decisions made at the Conference.<sup>129</sup> The “Ad Hoc” group had been formed in 1991 to begin the long and arduous process to “identify and examine potential verification measures from a scientific and technical standpoint” and it became known as the VEREX group.<sup>130</sup> The original aspects agreed upon for VEREX involved three main elements: mandatory declarations, declaration follow-up procedures, and investigation of non-compliance.<sup>131</sup> The mandatory declarations section required that all states submit declarations on activities that were carried out in all facilities located in their jurisdiction. These activities were noted for a particular period of

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<sup>128</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 281-2.

<sup>129</sup> Sims, "A simple treaty, a complex fulfillment: A short history of the Biological Weapons Convention Review Conferences," 13.

<sup>130</sup> United Nations, "Biological Weapons Convention Background Info."

<sup>131</sup> Jorge Pedraza, "The Need to Establish the Organisation for the Prohibition of Biological Weapons: A Proposal for the Future," *Public Organization Review* 12, no. 1 (2012): 65-6.

time that work governed by the BWC was carried out. The declaration follow-up procedures involved infrequent and randomly selected inspection of declared facilities as well as clarification procedures. Lastly, the investigation of non-compliance involved field investigations and facility investigations in order to uncover and deal with violations of the BWC.<sup>132</sup>

Members of the BWC knew that the VEREX process would take a considerable amount of time and by the time that the Fifth Review Conference occurred it had taken 10 years of hard work to come to a consensus. The sudden refusal by the United States to sign any agreement halted the Conference until 2002 when small working groups were held to discuss a rescue plan before the entire policy regime fell apart.<sup>133</sup> The verification procedures that were in the final stages of approval involved “declarations and inspection analogous to those used to prevent the proliferation of nuclear and chemical weapons” but the United States concluded, “Such a protocol would not produce confidence commensurate with the cost and effort.”<sup>134</sup> Some of the main points used by the United States to justify their refusal to sign onto VEREX were that actual verification of compliance could not be demonstrated due to the dual-use nature of biological production facilities, a verification regime cannot adequately detect clandestine activities which “can generate a false confidence that a country is in compliance with the treaty, when in fact is not,” and that intrusive inspections by international teams can put the United States at a greater risk for foreign espionage not only of military information but of commercial

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<sup>132</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 277.

<sup>133</sup> Sims, "A simple treaty, a complex fulfillment: A short history of the Biological Weapons Convention Review Conferences," 13.

<sup>134</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 277.

proprietary information.<sup>135</sup> The issue of compliance was discussed by the U.S. in a statement to the BWC in December 2013, reaffirming that the U.S. delegation “does not agree that there is a need to define which types of cooperation are ‘relevant’ to the BWC and which are not.”<sup>136</sup> In order to understand the complexities of the verification protocol refusal, it is important to understand the history of the United States concerning international regimes, and more specifically, arms agreements.

### **The U.S. History of International Arms Agreements**

The U.S. position on international regimes has entered many phases over the decades, each with its own points of importance. The culture of multilateralism began with the regimes created after the failure of the League of Nations. These organizations included Bretton Woods, the United Nations, and NATO. They gave outside states a voice in U.S. policy, forever changing the role of the international community in U.S. domestic politics.<sup>137</sup> The later entrance of the Cold War gave way to a new dynamic for international regimes. The United States spearheaded more international regimes during the beginning and height of the Cold War in order to legitimize the role of the state in comparison to the Soviet Union.<sup>138</sup> Some argue that the U.S. focus has shifted considerably in the past few years and that international regimes are now viewed as more

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<sup>135</sup> Pedraza, "The Need to Establish the Organisation for the Prohibition of Biological Weapons: A Proposal for the Future," 65.

<sup>136</sup> *U.S. Statement at the Biological Weapons Convention: Meeting of the States Parties to the Biological Weapons Convention* (December 9, 2013) (statement of Christopher Buck, Head of Delegation, United States of America).

<sup>137</sup> David Lake, "Making America Safe for the World: Multilateralism and the Rehabilitation of US Authority," *Global Governance* 16 (2010): 477-9.

<sup>138</sup> David Skidmore, "The Obama Presidency and US Foreign Policy: Where's the Multilateralism?," *International Studies Perspectives* 13 (2012): 44.



constraining. This could be seen, by example, with the invasion of Afghanistan and the permission that had to be given by the UN to do so.<sup>139</sup>

The Bush Administration had notable issues in regards to exercising sovereign rights within the realm of activities that are covered by an international regime. The Obama Administration has pushed through a few more policy ratifications and signatures but seems to have carried through the same hesitancy towards international regimes as the previous administration.<sup>140</sup> Obama has also pushed for the participation of the United States on an ad hoc basis. Some argue that this is purely for the public relations aspect of diplomacy because the ad hoc meetings are not attached to any binding agreements or overarching international institutions.<sup>141</sup> International regime participation is an extremely important aspect to guide the understanding of the BWC. More specifically, international arms agreements can reveal patterns concerning U.S. involvement.

The idea of arms control and agreements gave rise during the Cold War, when the United States and the Soviet Union battled for soft power. Years after the fall of the Soviet Union the role of arms agreements held much less importance in the international arena.<sup>142</sup> A few key agreements, however, took shape during the Cold War and continue to morph in the more recent years. The United States has been involved with several arms agreements including the Nuclear Nonproliferation Treaty (NPT), Chemical Weapons Convention (CWC), Comprehensive Test Ban Treaty (CTBT), and the New START

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<sup>139</sup> Lake, "Making America Safe for the World: Multilateralism and the Rehabilitation of US Authority," 480.

<sup>140</sup> Skidmore, "The Obama Presidency and US Foreign Policy: Where's the Multilateralism?," 44.

<sup>141</sup> Ibid., 47.

<sup>142</sup> Regina Karp, "Nuclear Disarmament: Should America Lead?," *Political Science Quarterly* 127, no. 1 (2012): 47.

treaty.<sup>143</sup> The United States has signed and ratified all of the above treaties/agreements except for the CTBT. In many instances the United States initially did not ratify and chose to at a later date, which leads some to believe that ratification for the CTBT could be in the future.<sup>144</sup> While some see the changing opinions of administrations as a general distrust of international regimes, others view this behavior as the United States struggling to reconnect with its “soft-power capacities.”<sup>145</sup> Ultimately, a verification protocol of some degree is present in all of the above international regimes. This analysis of arms agreements leans heavily towards another type of outside influence over the refusal to verify the BWC, whether it is the role of other signatories or internal state influences. The role of other large states within the BWC, more specifically China and Russia, will be analyzed in order to identify patterns of behavior between the U.S. verification decisions and actions of states of high importance within the BWC.

### **Case Studies of Other Large BWC States**

The U.S. stance on the BWC has not changed since the 2001 rejection, which would lead one to believe that another factor is holding the United States back from signing. Ultimately, the case studies of China and Russia will reveal that these state’s actions have played a strong role in the U.S. refusal of VEREX. The actions of these states have had a strong influence on U.S. policy decisions and they present a threat to U.S. sovereignty if the United States submitted to a policy like VEREX.

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<sup>143</sup> Kathleen Bailey, "Why the United States Rejected the Protocol to the Biological and Toxin Weapons Convention," National Institute of Public Policy, [www.nipp.org/National%20Institute%20Press/Archives/Publication%20Archive%20PDF/Bailey%20Protocol.pdf](http://www.nipp.org/National%20Institute%20Press/Archives/Publication%20Archive%20PDF/Bailey%20Protocol.pdf), 18 (accessed March 1, 2013).

<sup>144</sup> Ibid., 19.

<sup>145</sup> Karp, "Nuclear Disarmament: Should America Lead?," 51.

## *Russia and the Soviet Union*

The role of Russia and the USSR with the BWC is truly unique. The USSR signed onto the BWC in 1972, the year it was ratified. Later it was discovered that the Soviets never halted their BW program after its initiation in the 1920s. The USSR continued their offensive BW program in 1973 while making promises to the international community that they would abide by the BWC.<sup>146</sup> During the continued negotiations for the BWC, the Soviet Union was developing the “world’s largest and most sophisticated biological warfare program”, which was managed by the governmental agency Biopreparat.<sup>147</sup> The reasoning behind the BW program was later revealed to be that the USSR did not believe the United States had given up its BW program when Nixon announced that they would be joining the BWC in the early 1970s. The Soviets saw this declaration by the United States as the great “American lie” and felt that their BW program was a “response in kind” to the United States and Nixon’s statements.<sup>148</sup> After years of suspicion by the United States concerning the behavior of the USSR, the United States went public with their allegations of a Soviet BW program in 1984. Department of Defense and Congressional reports were published that stated the Soviets had very likely been developing a BW program that was in violation of the BWC.<sup>149</sup> After years of the BW program being developed, reports of an incident at Sverdlovsk, Russia in 1979 fueled these suspicions. Dry anthrax spores from a military compound were accidentally released into the atmosphere, killing approximately 66 people. While the Soviets claimed

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<sup>146</sup> Michael Moodie, "The Soviet Union, Russia, and the Biological and Toxin Weapons Convention," *The Nonproliferation Review* Spring (2001): 60.

<sup>147</sup> Raymond A. Zilinskas, "Take Russia to ‘task’ on Bioweapons Transparency," *Nature Medicine* 18, no. 6 (2012): 14.

<sup>148</sup> Moodie, "The Soviet Union, Russia, and the Biological and Toxin Weapons Convention," 60.

<sup>149</sup> *Ibid.*, 61.

the outbreak was due to tainted meat consumption, the United States suspected that this originated from a BW facility.<sup>150</sup>

In 1992 Russian President Boris Yeltsin made a public statement that the BW program of the former USSR had continued past the adoption of the BWC.<sup>151</sup> After the confession by the President, the United States, United Kingdom, and Russia entered into the Trilateral agreement that stated all three states would work to be “in full compliance with the Biological Weapons Convention” and confirmed that the states would cease any BW programs if they indeed had them.<sup>152</sup> The Trilateral agreement also entailed inspections of facilities in all three states to ensure mutual compliance with the agreement. After multiple visits to Russian, British, and American facilities it became clear that the inspections would become a tit-for-tat pattern of transactions. The U.S. government made numerous statements after their visits to Russian sites with the British that they were not happy with the evasiveness of the Russian military concerning different sites and felt that the evidence they found supported beliefs that Russia had maintained its BW capabilities in spite of the various agreements they had signed onto. In turn, the Russians issued multiple statements after their visits to U.S. facilities that it was clear the United States was engaging in BW activities and maintaining their capabilities to produce BW at a moments notice.<sup>153</sup> It has also been reported that even after Yeltsin stated Russia would end its BW activities in 1992, the Ministry of Defense overrode his statements and the BW program continued.<sup>154</sup>

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<sup>150</sup> Ibid., 60.

<sup>151</sup> Dany Shoham and Ze’ev Wolfson, "The Russian Biological Weapons Program: Vanished or Disappeared?," *Critical Reviews in Microbiology* 30 (2004): 246.

<sup>152</sup> Moodie, "The Soviet Union, Russia, and the Biological and Toxin Weapons Convention," 62.

<sup>153</sup> Ibid., 64.

<sup>154</sup> Zilinskas, "Take Russia to ‘task’ on Bioweapons Transparency," 14.

Since the 1992 declaration by Yeltsin it has been noted that Russian officials have never publically acknowledged production of BW again. It has been noted that Russian government officials have continued to play “word games” and in 2001 officials stated that Russia and/or the Soviet Union as never produced or stored BW.<sup>155</sup> President Putin played a large role in these “word games” when he publically stated in 1999 that Russia has only had a defensive BW program, which is permitted by the BWC.<sup>156</sup>

The United States has continued to express concern of the state of Russia and their previous BW capabilities. In 1998, following years of previous inspections, U.S. officials stated they were concerned that the Kremlin could start production of BW again if the need arose. Officials stated that the capabilities to produce BW in Russia were still very much in place.<sup>157</sup> An example of the potential capability was exhibited by the Sverdlovsk incident in 1979. According to reports, the Sverdlovsk location was dismantled in 1985 and rid of all BW production equipment. In 1992 a Russian correspondent visited the facility and noted that the equipment there was outdated and could not compare to American military equipment. Due to the fact that the equipment should have been dismantled in 1985, it was interesting the find that a correspondent came across equipment at the facility. Ever since 1992, no other correspondents, or states for that matter, have been given access to Sverdlovsk and local journalists have claimed that the location has resumed some activities after new equipment was purchased from Japan and other countries.<sup>158</sup> Some scholars argue that the preponderance of evidence

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<sup>155</sup> Shoham and Wolfson, "The Russian Biological Weapons Program: Vanished or Disappeared?," 247.

<sup>156</sup> Zilinskas, "Take Russia to 'task' on Bioweapons Transparency," 14.

<sup>157</sup> Moodie, "The Soviet Union, Russia, and the Biological and Toxin Weapons Convention," 63.

<sup>158</sup> Shoham and Wolfson, "The Russian Biological Weapons Program: Vanished or Disappeared?," 249-50.

suggests that the USSR BW capability has been clearly adopted by Russia and incorporated into the “classified military framework” and overall military system.<sup>159</sup>

More recent evidence has suggested that Putin is looking to reinvigorate the old BW production capabilities and system to further his view of a revitalized Russia. A March 22nd, 2012 meeting attended by Putin and his ministers noted a statement made by the Ministry of Defense Anatoly Serdyukov when he stated to Putin that his department had “thoroughly studied your article [in which the tasks are listed and explained] and prepared a plan for implementing the tasks.” The fourth task on Putin’s list was “the development of weapons based on new physical principles: radiation, geophysical, wave, genetic, psychophysical” and as of April 4th, 2012, this fourth task had been removed from the online press release.<sup>160</sup> This declaration by the Russian government of a new focus on weapons that fall under the “genetic” category can be quickly interpreted to entail some type of BW capability. Evidence has revealed that the Russians have preserved not only their capabilities but their “recipes” as well. These recipes also entail munitions specifications if the need should arise.<sup>161</sup> Scholars have noted that the signatories of the BWC and the United States must urge Russia to open their doors to inspections and relinquish their recipes and ammunition specifications.<sup>162</sup> Overall, the Russian BW threat has continued to remain on the radar of the United States and has undoubtedly played a role in their decisions concerning the BWC.

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<sup>159</sup> Ibid., 254.

<sup>160</sup> Zilinskas, "Take Russia to 'task' on Bioweapons Transparency," 14.

<sup>161</sup> Ibid.

<sup>162</sup> Ibid.

## *China*

Another state of concern for the United States that has also been discussed in scholarly literature is China. China's history with BW is starkly different than that of Russia. The most synonymous event that speaks to China's experience with BW is the testing of the Japanese Unit 731. Field tests were conducted in approximately 11 Chinese cities, killing more than 200,000 during World War II.<sup>163</sup> These horrific events were forever engrained in the minds of Chinese citizens and continued to be relevant when other offensive programs, such as those belonging to the United States and the USSR, were created off the research the Japanese conducted. At the onset of the BWC in 1972, China refused to join because it saw the treaty as discriminatory against developing countries but finally agreed and signed in 1984. The one condition of the 1984 signature was that China agreed that the BWC would be legally binding only if other signatories followed the agreement.<sup>164</sup> In the late 1980s, after China signed onto the BWC, there was a reported accidental release of hemorrhagic fever in the Xinjiang Province. Further investigation and media accounts revealed that the outbreak was most likely derived from a lab where scientists were "weaponizing viral diseases" but an official government statement was never released.<sup>165</sup> This accidental release raised suspicions about the Chinese and their potential to have a BW program.

When the verification protocol discussions arose in the BWC in the early 1990s, China was very involved in the procedure. The Chinese government was primarily motivated by the "assurance that its potential rivals, such as the United States and Japan,

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<sup>163</sup> Yanzhong Huang, "Managing Biosecurity Threats in China," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 9, no. 1 (2011): 32.

<sup>164</sup> Eric Croddy, "China's Role in the Chemical and Biological Disarmament Regimes," *The Nonproliferation Review* 9, no. 1 (2002): 34.

<sup>165</sup> *Ibid.*, 26.

had no offensive BW.” Much like their Russian counterparts, Chinese officials hold steadfast that the United States did not give up their BW capabilities when Nixon announced the end to BW research. This belief also played a role in the verification protocol proceedings because China could not accept that the United States was BW free without being able to search all of its facilities.<sup>166</sup> While China has pushed for a verification protocol they also see the other side of the debate. Due to their positioning in the technology and industrial sector, Chinese officials have stated that due to the rapid pace of biotechnology, a verification protocol would not work because it would be extremely difficult to distinguish what is defensive and what is offensive.<sup>167</sup> This dual-use concern also mirrored itself in the activities of the Chinese government when the head of the Anti Biological Warfare Unit (aka The Institute of Military Medicine) gave an interview in 1994 and stated that the Chinese government does not have an offensive BW program. Of note, The Institute of Military Medicine was not listed on the Confidence Building declarations for the BWC that China had submitted for review. It was noted that the Institute carries out work that is dual-use in nature and is not overtly related to the Chinese military even though its title offers another view.<sup>168</sup>

The joining of the BWC by China is indicative of a growing trend of becoming more involved in disarmament and arms control negotiations.<sup>169</sup> Overall, China sees arms agreements as a “part of a Marxist struggle among nations for security and dominance” and notes that they are “beneficial for promoting [their] independence, freedom, and defensive posture, as well as being good for gaining sympathetic public opinion, uniting

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<sup>166</sup> Ibid., 34.

<sup>167</sup> Ibid., 35.

<sup>168</sup> Ibid., 27.

<sup>169</sup> Croddy, "China's Role in the Chemical and Biological Disarmament Regimes," 16.



the broad majority.”<sup>170</sup> It would seem as though China sees international arms agreements as tools to manipulate. This raises concerns about how much concern the country really has for real proliferation issues and the overall growing threat of BW.<sup>171</sup> Another point for concern is that China has been noted in DoD reporting to have maintained some elements of an old offensive BW program for the 1950s and is believed to possess “an offensive [BW] capability based on technology developed prior to its accession to the [BWC] in 1984.”<sup>172</sup> The infrastructure of the China’s biotechnology market has raised additional concerns about its dual-use capabilities, primarily in regards to their capabilities to produce a large number of vaccines that could arguable make them the “largest vaccine-producing nation.”<sup>173</sup> A large amount of Chinese publications concerning BW-related research activity have also drawn the attention of states like the United States.<sup>174</sup> The rejection of the verification protocol by the United States in 2001 renewed suspicions by the Chinese government that the United States was again pursuing an offensive BW program and by 2005 there was a growing number of civilian organizations in China that had ties to the military biodefense structure.<sup>175</sup> Overall, the threat from China continues to grow as their positioning in the biotechnology field grows as well.

### **The Influence of Russia and China over U.S. Rejection of the Verification Protocol**

The complicated dance between the United States and countries like Russia and China has continued to bleed into the issue of biosecurity. The analysis of the history of

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<sup>170</sup> Ibid., 30.

<sup>171</sup> Ibid., 41.

<sup>172</sup> Huang, "Managing Biosecurity Threats in China," 32.

<sup>173</sup> Croddy, "China's Role in the Chemical and Biological Disarmament Regimes," 27.

<sup>174</sup> Huang, "Managing Biosecurity Threats in China," 32.

<sup>175</sup> Ibid., 32.

BW with Russia and China reveals that both states used perceived actions by the United States to “justify” their own seemingly subversive activities. This issue can be seen as somewhat of a “chicken and egg” scenario. Have actions by the United States caused China and Russia to pursue activities that are not on par with the BWC, in turn creating an unattractive environment for the United States to accept VEREX? Or have actions by Russia and China created a threatening environment for the United States, therefore pressuring the United States to remain closed off to protocols like VEREX? The United States may have influenced the activities of Russia and China but ultimately it appears that the actions of Russia and China have been the primary motivator for the United States to reject VEREX. The U.S. track record with international arms agreements leans towards United States eventually complying but that does not appear to be in the horizon for VEREX. VEREX is not the ideal choice for the United States to deal with the threat of bioterrorism on an international scale but there continues to be a push in that direction according to the language of recent BWC meetings.

### **The Renewed Argument for the Verification Protocol**

Since 2009 there has been a greater push for more international standards that some feel cross into the territory previously covered by VEREX. Many have voiced the opinion that a comprehensive international oversight system for the BWC, and more specifically for biotechnology, be created. The push for this type of organization has not been received well, which is assumed by most to be tied to the verification protocol and dual-use dilemma.<sup>176</sup> Some possible directions for these international standards in the future include three main aspects, the first being the creation of the “Organization of the

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<sup>176</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 277.

Prohibition of Biological Weapons” which would be created to “supervise the implementation of the BWC’s provisions by all state parties.”<sup>177</sup> The second possible direction would be using the Chemical Weapons Convention (CWC) as the organization to ensure that state parties are complying with the rules states in the BWC. Given that the CWC has a functioning verification protocol, some see it as the key for creating a lasting verification protocol for the BWC. Lastly, the third possible direction would be the strengthening of the Implementation Support Unit (ISU) to become the supervising body to ensure that all aspects of the BWC are implemented by the states involved with the convention.<sup>178</sup> The ISU was established to work on the implementation of Confidence Building Measures (CBMs) and to begin the process of establishing an open dialogue with the international scientific community. During the Intersessional meetings that took place from 2007 to 2010, the ISU engaged several international scientific groups and helped spread information to “do-it-yourself” biology enthusiasts as well as “industry groups, scientific societies, and governments to promote the secure development of synthetic biology.”<sup>179</sup> The increase in budget and staff for the ISU in 2011 gives hope to VEREX proponents that the work that was carried out in the past five years prior will only continue to grow.

Overall, parties that pushed for VEREX have been attempting to find alternatives within the international regime structure to have a verification protocol, without referring to it as such. The international regime structure does contain some alternatives to VEREX, which may be credible options for the United States to explore. More

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<sup>177</sup> Pedraza, "The Need to Establish the Organisation for the Prohibition of Biological Weapons: A Proposal for the Future," 61.

<sup>178</sup> Ibid.

<sup>179</sup> Epstein, "Biosecurity 2011: Not a year to change minds," 33.

importantly, national standards for each state can provide additional options to keep the threat of bioterrorism at bay for not only the United States, but the entire international community as a whole.

## **Alternatives to Verification Protocol for the Future**

### *Global Scientific Community Outreach*

The changes in the BWC since 2011 are notable and have set the stage for a variety of possibilities in the future, in lieu of a verification protocol. One of the most important elements that will surely continue and thrive in the coming years is the level of engagement with the global scientific community. One such engagement would involve an “internationally agreed constraint of shared information to contain real threats until defenses can be developed.”<sup>180</sup> If scientists are knowledgeable about the threat level of a certain piece of research or advancement in technology, it could be argued that they could hold onto the information until an analysis of threats surrounding it and possible solutions could be found. Along with showing more constraint, there will be a need to educate scientists and students working in the life sciences on this issue and many others surrounding the dual-use issue of the biosciences, in order to breed a “culture of responsibility, awareness, and vigilance.”<sup>181</sup> Education courses are a possibility to provide a basis and a norm for behavior related to the biological science sector.<sup>182</sup> This training would need to be established at an international level to ensure that information is not watered down. Representatives for the BWC also note that issues may arise

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<sup>180</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 277.

<sup>181</sup> *Remarks at Center for Biosecurity - University of Pittsburgh Medical Center, Charting the Future of Biosecurity: Ten Years After the Anthrax Attacks* (October 4, 2011) (statement of Thomas Countryman, Assistant Secretary, Bureau of International Security and Nonproliferation, U.S. Department of State).

<sup>182</sup> Brian Rappert, "Views From the Field III: Awareness-Raising Seminars," in *Improving implementation of the Biological Weapons Convention: the 2007-2010 Intersessional Process*, ed, Piers Millett, (New York: United Nations, 2011), 168.

because of the dilemma that the measurements of effectiveness for these types of classes simply do not exist.<sup>183</sup>

Methods for future engagement have also been pushed within the already existing BWC structure. The growing importance of the ISU is noted as being a big player in the future of engagement with the scientific community. If the verification aspect of the ISU can be kept at bay, this would be an extremely useful tool for communication. Within the BWC structure there has also been a push for a “code of conduct” for scientists tied to the life sciences. During 2005 meetings between experts and the state signatories to the BWC in Geneva, the parties considered the “content, promulgation, and adoption of codes of conduct for scientists.”<sup>184</sup> This “code” would encourage the engagement with scientists across the globe and make them aware of the BWC and its mission, thereby in theory, creating a safer environment built up against the use of BW.

In addition to the BWC structure, other programs also exist to improve engagement with the scientific community and they are continuing to grow in strength. One such program is the Global Partnership Against Spread of Weapons of Mass Destruction, created at the G8 Summit in 2002. The G8 agreed to pay \$20 billion up to 2012 and in 2011 leaders agreed to extend the partnership that would reach out to scientists that were formerly working for weapons programs in countries such as the Soviet Union. This type of program closely mirrors the outreach steps taken within the United States with its scientific community. The Global Partnership now consists of 23 countries that are working to reinforce “the safe and beneficial use of the life sciences

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<sup>183</sup> Epstein, "Biosecurity 2011: Not a year to change minds," 36.

<sup>184</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 282.

and biotechnology internationally.”<sup>185</sup> The Partnership’s goal in the future must be to engage with those scientists who have never been involved in any type of weapons program, creating more dialogue at an international level. Outreach with the scientific community is a possible direction for the BWC, but advances in biotechnology are also of great importance.

#### *Adapting to Advances in Biotechnology*

Biotechnology advances at a rapid pace, which makes it extremely difficult to keep up with all of the new technology that could have an impact on the BWC. At the 2001 review conference the United Kingdom pushed for the creation of a Scientific Advisory Panel for the BWC. This panel would “define what research should be allowed, what should be prohibited and what research findings should be subjected to restrictions or restraints on communication.”<sup>186</sup> The very future of the BWC is at stake if this “mechanism” cannot be put into place across all state parties to the convention.<sup>187</sup> The advisory panel would also be a depository for specific science and technology papers that tie directly into the BWC framework and area of concern. A more frequent meeting of science advisors has also been brought up concerning the BWC.<sup>188</sup> Due to the fast pace of biotechnology, members of the board would have to meet more frequently than every five years to discuss new and upcoming scientific publications.

A report released in 2011, just prior to the Seventh Review Conference, highlighted the interdisciplinary nature of rapid biotechnology changes and the “extent of

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<sup>185</sup> Epstein, "Biosecurity 2011: Not a year to change minds," 35.

<sup>186</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 280.

<sup>187</sup> Pedraza, "The Need to Establish the Organisation for the Prohibition of Biological Weapons: A Proposal for the Future," 64.

<sup>188</sup> Sims, "A simple treaty, a complex fulfillment: A short history of the Biological Weapons Convention Review Conferences," 14.

its diffusion around the world.”<sup>189</sup> The report was published by the US National Academies and was based on a study in 2010 in Beijing. The Beijing international workshop brought attention to the various aspects of rapid changes in the life sciences and was a rare glimpse of the scientific community reaching out to engage with the BWC. While it is important for these scientists to engage with the BWC, it is also imperative that those implementing the BWC understand the advances and what must be done to adapt to them, without crossing too heavily into the verification protocol aspects.<sup>190</sup> While these changes at an international level are important, so are the policies that are available at the national level.

#### *Creation of National Standards*

The United States created the National Science Advisory Board for Biosecurity (NSABB) after the Fink Committee report was published that brought attention to the fact that life sciences research may be used for BW production and bioterrorism. The NSABB created an oversight structure for the United States that ensured active government involvement while pushing for the self-governance standpoint.<sup>191</sup> In 2006 the United States also created the Biosecurity Engagement Program (BEP) out of the U.S. Department of State to engage countries concerning “national security, science, and public health issues, towards reducing biological risks.”<sup>192</sup> The NSABB and BEP are enabling the United States to live up to its obligations in signing the BWC, without signing onto a verification protocol. Essentially, these two organizations serve as a

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<sup>189</sup> Epstein, "Biosecurity 2011: Not a year to change minds," 34.

<sup>190</sup> Ibid.

<sup>191</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 281.

<sup>192</sup> Jason Rao, "United States Department of State's Biosecurity Engagement Program: Bio Threat Reduction Through International Partnerships," *Encyclopedia of Bioterrorism Defense* 1 (2011): 617.

verification protocol within the United States itself. The United States, Britain, and other nations have also created their own export controls concerning agents and strains that could be used for BW production.<sup>193</sup> These nation regimes, namely the Wassenaar Arrangement and the Australia Group system, are legally binding within their states to restrict dual-use technology as well. Ultimately, the national based programs appear to be a very credible option for the United States in the future.

## **Conclusion**

VEREX came extremely close to being adopted in 2001 but with the rejection by the United States, the future successes of verification policies appear highly unlikely. The motivations behind the VEREX rejection are complicated and are certainly multi-faceted. Most notably, the actions and reactions of states such as Russia and China have most certainly pointed to those states having an influence over U.S. decision-making concerning VEREX. It is highly likely that the United States, given its statements about VEREX, sees these two countries as potential threats to their sovereignty. This threat will only become more magnified if the United States chose to sign onto a binding agreement like VEREX. While one may also argue that the general stance of the United States towards international arms agreements plays into the decision about VEREX, it actually seems as if the refusal goes against past patterns concerning U.S. involvement with arms agreements.

There are a multitude of alternatives to VEREX that the United States may choose to explore in the future. It appears that the United States is investing more resources into national based programs, in order to increase security but to also project to other BWC

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<sup>193</sup> Atlas and Dando, "The Dual-Use Dilemma for the Life Sciences: Perspectives, Conundrums, and Global Solutions," 281.



signers that they are making strides to withhold the articles of the BWC. While verification is unlikely to happen and is not the ideal policy choice for the United States, it appears that there are still policy options available at the international level of the BWC in order to deal with the threat of BW and bioterrorism, such as the BWC ISU and State Department BEP program. While some of the primary signatories of the BWC may not agree with the U.S. decision to reject VEREX, it appears that the United States has plenty of avenues to prove to them that they are committed to dealing with the threat of BW directly and effectively.

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## CONCLUSION

The threat of bioterrorism and bioweapons is real, and while other imminent threats such as drastic state regime changes and international terror groups have taken center stage, one must not forget that these changes can correlate directly with a rise in the biological threat to the United States. Anthrax introduced the threat of bioterrorism to the U.S. public and while there are many cases that have not made the news since then, the threat is still alive and well. The detection methods for those looking to do harm have shifted in response to the new leaderless resistance approach, but law enforcement and policy makers must stay one step ahead in order to neutralize the threat to public health, as well as preventing the deaths of innocent Americans by biological agents. While it is clear that domestic politics and ideological differences played a role in Presidential administration decisions concerning bioterrorism, a more in-depth analysis may reveal intricacies of how domestic politics can shape a policy like bioterrorism defense. These intricacies could arguably include favoritism towards the funding of certain bio-related security projects, the swift de-funding of projects for political dealings, and a variety of other factors.

It is important to note that the overall growing domestic threat of leaderless resistance is not restricted to those following an overarching ideology. The leaderless resistance trend is hard to solely quantify as a terrorism-based activity when some of the case studies could easily tie to criminal actions. Given the resources available it was difficult to discern the true intentions behind many of the case studies if the perpetrators did not outwardly state what their motivations were. The domestic threat could encapsulate those with direct links to a terrorist organization launching an attack within

the United States, whether they act alone or within a cell. Given that U.S. law enforcement has made major strides in detecting that type of behavior, it could be argued that the leaderless resistance route is far more likely to be taken. Overall, the next administration must continue to morph our bioterrorism strategy to respond to changes in the threat streams and not just use the strategy for political purposes.

While the biological threat has been sparsely visible in the U.S. media and policy outlets, the brief mentions of it almost exclusively tie to a non-state actor obtaining or weaponizing an agent to attack the United States. The policy shift after 9/11 from state-based threats to non-state actors seems to have lessened the attention that must be given to state-based threats. It is paramount that in this time of transition from the wars in Iraq and Afghanistan, to a pivot in Asia to maintain global dominance, that the United States begin to refocus its efforts on potential state-based BW programs that could be hiding under their radar. The quantitative analysis seen in this thesis is one that is difficult to prove given it is attempting to make future predictions, but one must not forget the importance of the phrase “history is likely to repeat itself.” Historical reviews serve a purpose and the state threat identification seen in this thesis does just that by attempting to identify patterns in state behavior that could open up discussion into this threat that has received little attention. One direction that this research could take in the future would be to analyze across more datasets with a larger population. There was a selection process due to time constraints that could easily be widened to all of the states that belong to the BWC. It would be beneficial to further study threats that may be hiding just under the surface or in countries considered to be allies of the United States. Additional “features” could also be analyzed with the addition of more datasets. Datasets pertaining to conflict

levels within states and their state neighbors would be useful as well as total monetary amounts for state pharmaceutical industries and the number of declared biosafety labs within a state's borders. The reality of the situation is that state-based programs, while presenting an outward and obvious threat of using BW against the United States, can also open up possibilities of other actors getting their hands on BW to unleash it on whomever they see fit.

The signing of the Biological Weapons Convention in 1972 seemed to bring a sigh of relief to the international community. States acknowledged that they indeed had programs in the past and were willing to give them up for the greater good. As seen in Chapter 2 however, that did not always occur. Given that the threat was still very much alive, the United States pushed for a verification protocol along with other signatories but then changed their mind in 2001. While it appears that the actions of other anti-VEREX states such as Russia and China influenced the U.S. decision to not adopt VEREX, the United States must act to adopt a policy toolbox to prove their willingness to help battle this threat at the international level. Out of all of the policy options, domestic programs seem the most compelling way to battle the biological threat by focusing on relationships with the scientific community; however, one must not forget the need for international involvement in order to protect the global community as a whole. International outreach and scientific networks appear to be the biggest alternative at the global level to help compliment the U.S. domestic programs. While a thorough analysis of U.S. actions pointed strongly towards Russia and China as the driving factor behind U.S. decision making to reject VEREX, it is likely that more information from government sources (that are not available to the public) would reveal information about the historical 2001

decision. Anecdotal evidence rising from both the Russia and China's case studies were speculation but given the limited sources available, they appeared to be paramount to showing a pattern of behavior that would challenge the United States. Future policy directions in lieu of VEREX are likely to arise with changes in scientific knowledge and information sharing. The United States must be proactive in exploring all avenues and working to ensure their partners in the BWC that while the likelihood of the United States signing onto VEREX appears slim, the country will do everything in its power to mitigate risks associated with BW at a global level.

As complex and intermingled as the biological threat is, it will only continue to mutate and rise as advances in technology and scientific knowledge increase. The United States must remain at the forefront of this threat, become a proactive actor and not just wait for the next attack to occur. All too often with U.S. security policy there is a rather reactionary approach and one that involves an analysis of "what went wrong." Just like the nuclear threat, the biological one can have catastrophic consequences if U.S. policy makers wait around to extinguish the next fire to appear on the horizon.