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Scott Cary
City of Washington, D.C., scott.cary@dc.gov

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Abstract

This article presents a strategic, operational, and tactical analysis of information currently available on the state of bio-weapons development by non-state actors, primarily Islamist jihadists. It discusses the evidence supporting a practical assessment that non-state actors have begun to acquire, and in the near-term intend to employ, bio-weapons. A pathogen and method of attack specifically designed to achieve the strategic goals of jihadists are presented as functional examples of the problem of the emerging global bio-weapons threat.Is a terrorist attack utilizing biological weapons a real threat? If so, is there a way to predict the circumstances under which it might happen or how it might be conducted? This article explores what is known and cannot be known about these questions, and will examine the threat of biological terrorism in the context of the strategic goals, operational methods, and tactical intentions of Islamist terrorists.

The Tipping Point: Biological Terrorism

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Introduction

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Is a terrorist attack utilizing biological weapons a real threat? If so, is there a way to predict the circumstances under which it might happen or how it might be conducted? This article explores what is known and cannot be known about these questions, and will examine the threat of biological terrorism in the context of the strategic goals, operational methods, and tactical intentions of Islamist terrorists.

Strategic, Political Nature of Terrorist Groups

Any strategic analysis of terrorist weapon capabilities and potential future attack should start with the understanding of who the terrorists are and how their perceived legitimacy is derived from the tenets of their radical religious beliefs. Terrorists, like nation-states, are determined to impose their will upon others. Unlike nation-states, however, terrorists resort to violence as the first and final solution.

The Basis of the Right to Rule and Asymmetric Warfare

A nation's international decisions are carried out by diplomacy, enforced by a military, and directed by a political body as an expression of the interests of the people it governs. In cases of international conflict, a nation's standing military force executes international policy decisions. Such actions are openly recognized by sovereign nations as part of international *norm de jure* due, in large part, to the uniform practice of war throughout history. Prescribed force, within the bounds of just war, is the

means by which legitimate nation-states periodically resolve their differences to, somewhat paradoxically, continue to survive in a world that requires order and the rule of law to maintain long-term peace and stability. In a less than perfect world, however, legitimacy is sometimes obtained by other means.

One measure of legitimacy is the degree of support that leaders have and how they obtained that support. Legitimacy can be won by the leaders of a country who hold the confidence of its people obtained through elections. Nation-states that attempt to acquire legitimacy through blunt force are, on the other hand, rejected by the international community. We may take strong objection to the grounds upon which such authority or self-imposed "legitimacy" rests, but we ignore these leaders and nations at our peril. This is the kind of so-called legitimacy that is sought by totalitarian regimes and terrorist groups worldwide.

Unlike nation-states, terrorist groups are not recognized as legitimate and independent sovereign forces; they do not represent the political will of the citizens of any country, and they do not have the ability to employ collective military might against their opponents. Nevertheless, their actions *are* political in nature, both because their actions are a direct manifestation of their culture, economics, and belief system, and because they are aimed at creating the same sort of changes at which legitimate military actions are aimed—imposing their political will upon an outside group of people. They seek to attain legitimacy through the threat or act of large-scale violence, and thereby achieve the ability to impose their values upon our country and other countries.

Jihad

Islamist extremists who regularly employ violence to achieve their ends describe themselves as fulfilling a religious duty to combat non-Muslims and, particularly, to combat those who do not adhere to their radical interpretation of Islam. Many Islamists are granted recognition, support, and in some cases legitimacy, even if those actors use violence in a way that non-Muslims and Muslims alike would label "terrorism."

Despite the fact that the term jihad has several levels of meaning, ranging from intense concentration on self-improvement to advancement of the faith through writing, Islamist extremists invariably select its most extreme interpretation—the conversion or death of non-believers and even moderate factions within Islam.

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The first jihad began circa 622 CE, when the founder of Islam, Mohammad, first coined the term and actively engaged in it. Because Muhammad is considered by Muslims to be the perfect human example, everything he did in his life is likewise considered worthy of emulation by all Muslims for all time. Therefore, many extremist Islamists find it difficult to refute that jihad is simply a socially acceptable justification for violence.

In the end, jihadist terrorist groups seek at least these two things:

1. Recognition that they are a potent, independent force

2. The ability to influence world events and impose their way of life on others

Why Jihadists Would Choose WMD

It is for the above reasons that Weapons of Mass Destruction (WMD) appeal to Islamist extremists. It is a generally accepted principle among Western analysts that terrorists are less concerned with the number of people killed in an attack and the destructive power of WMD than they are about the number of witnesses and survivors "terrorized" by the attack.[1] It is for the sake of its effect on "human behavior, media coverage, and psychosocial"[2] functioning of the public, as well as its effect on the leaders elected by that public, that they commit atrocities such as televised beheadings and indiscriminate marketplace bombings. The table below lists some of the prominent psychological effects that would likely surface in the aftermath of a biological terrorism incident.

Table 1: Psychological Responses Following a Biological Terrorist Attack

Horror
Anger
Panic
Magical thinking about microbes and viruses
Fear of invisible agents
Fear of contagion
Anger at terrorists, government, or both
Attribution of arousal symptoms to infection
Scapegoating
Paranoia
Social isolation
Demoralization
Loss of faith in social institutions

From "The Threat of Biological weapons: Prophylaxis and Mitigation of Psychological and Social Consequences."[3]

Biological weapons are unequalled in their capacity to visit terror on the public at large and at overwhelming the social structures and systems in place that serve the public. Widespread research on this subject is ongoing, and several academic sources have described the probable effect of a biological attack on the general populace:

> *An incident with these weapons will be unlike any other disaster…a biological incident poses a sudden, unanticipated, and unfamiliar threat to health that lacks sensory cues, is prolonged or recurrent, perhaps is contagious, and produces casualties that are observed by others. These are the factors that, historically, have spawned fear, panic, and contagious somatization.*[4]

The bottom line, and most analysts will probably agree, is that terrorist groups will strike whenever they have motive, capability, and opportunity.

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Accessibility of Bio-Weapons to Terrorists

Because the use of biological weapons contributes to the very definition of terror, one must consider whether such weapons are available to jihadists as an attack option. Although the United States has already implemented world-class anti-proliferation efforts and expended billions in counter-terrorism and regional preparedness funding, it is difficult to detect the development of biological weapons capabilities by non-state actors, or even nation-states for that matter.

There are three main components to the development of most biological weapons: scientific expertise, pathogens and growth medium, and equipment. According to biological weapons expert Dr. Reynold Salerno of Sandia National Labs, "There's no good way to track or control expertise. There are few, if any, pieces of technology used to make bio-weapons that are not also used for some other legitimate purpose. There are a lot of pathogens naturally occurring and widely available for weaponization."[5]

By and large, biological weapons are getting easier to develop by individuals and non-state actors, either by indigenous manufacture, or acquisition and theft from any nation-state that has developed them. There is also the possibility of collecting pathogen samples from vectors that carry the infection during a naturally occurring outbreak. In 2006 and 2007, the U.S. State Department listed five legitimate nation-states that are known to openly support terrorist groups.[6] Four of them—Cuba, Iran, North Korea, and Syria—have established their own biological weapons programs, in addition to the known bio-weapons programs of the U.S., China, Egypt, Israel, Taiwan, and Russia.[7] There is evidence that some nation-states may be willing to assist non-state actors in their pursuit of this dangerous capability.

Equipment with which to develop biological weapons is now relatively easy to acquire, and the pathogens themselves are relatively commonplace. According to one source, it costs approximately $1.6 million using equipment that is commercially available to produce a viable biological weapon.[8]

A facility dedicated to the development of bio-weapons does not require much space, nor does it have to be in an isolated location, surrounded by barbed wire and biohazard signs, as one might expect to find in a state-run program. The U.S. Government and other nations with an active interest in monitoring the capabilities of their neighbors collect intelligence on potential bio-weapons facilities. Even so, bio-weapons projects could be located in the center of a large civilian population, and no one

would be the wiser. For example, former USSR bio-weapons facilities were often "hidden in plain sight" by using physical deception methods in order to change the visual signature of facilities.[9] These methods of deception allowed the Soviets to misrepresent facilities in photos taken by spy planes and later satellites capable of taking detailed pictures of suspected sites. If large, modern state programs can be so easily camouflaged from discovery by other nations using advanced imagery technology, consider how easily a much smaller lab built in an old warehouse or processing plant could be concealed, even from civilians residing mere yards away.

Relatively speaking, biological weapons are rapidly becoming more accessible and, hence, more feasible to acquire and potentially use than many other forms of WMD. According to Howitt and Pangi, "Biological weapons, cheaper and easier to produce than nuclear weapons and more lethal than chemical weapons, are now perceived as the weapon of choice for both state and non-state actors seeking to inflict maximum damage while minimizing the risk of detection and retaliation."[10] Whereas straightforward explosive attacks are relatively cheap compared to the damage and fear they produce, biological weapons are the next logical step up in attack technology. DiGionvanni stated, "...acquisition, delivery, and targeting of these weapons are within the grasp of any determined and skilled individual or group."[11]

Terrorist Operational Capabilities

Terrorist groups do not openly advertise their capabilities in bio-weapons development. For very good reasons, even if information existed on the location and capability of a terrorist-run facility for bio-weapons, it's unlikely that the information would be available to the public. There are very few primary sources of information on the subject of terrorist capabilities with respect to bio-weapons. Nevertheless, there are subtle indicators appearing on the worldwide scene as well. It is impossible to assert that such events constitute "proof" in the absence of primary documentation or more extensive evidence. Regardless, many analysts feel that where there is smoke, there must be fire.

For example, in January of 2009, the bodies of at least 40 alleged al-Qaeda operatives were discovered in a sealed cave in Algeria. All 40 victims had died of bubonic plague, which is readily communicable and kills within hours. As reported on January 19, 2009, by the Washington Times:

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> *Authorities in the first week of January intercepted an urgent communication between the leadership of al Qaeda in the Land of the Maghreb (AQIM) and al Qaeda's leadership in the tribal region of Pakistan on the border with Afghanistan. The communication suggested that an area sealed to prevent leakage of a biological or chemical substance had been breached.*[12]

There are not many alternative logical explanations for such a discovery, aside from the possibility that a secret bio-weapons facility had suffered a catastrophic accident. The plausibility of this scenario is even more likely when taken in context with al-Qaeda's previous interest in biological weapons. A former CIA chief and expert in terrorism has indicated that:

> *Documents discovered from Al Qaeda facilities in Afghanistan show that Bin Laden was pursuing a sophisticated biological weapons research program…Manuals and testimony also indicate that Al Qaeda has determined how to operationalize chemical and biological warfare.*[13]

North Atlantic Treaty Organization (NATO) terrorism expert Dr. Jill Bellamy-Dekker is in agreement that Islamist extremist groups have the capability to develop and carry out such an attack: "There is good reason for the Americans' fears…[al-Qaeda] had laboratories in north Afghanistan. They have scientists, chemists and nuclear physicists…People who follow such things know that al-Qaeda has laboratories…"[14]

A little closer to home, in a June 2009 article The Washington Times reported that:

> *U.S. counter-terrorism officials have authenticated a video by an al Qaeda recruiter threatening to smuggle a biological weapon into the United States via tunnels under the Mexico border, the latest sign of the terrorist group's determination to stage another mass-casualty attack on the U.S. homeland.*[15]

The successful use of a biological weapon on U.S. soil would be considered a desirable outcome by Islamist extremists in their pursuit of global jihad. The spokesperson for al-Qaeda agrees: "What a horrifying idea; 9/11 will be small change in comparison. Am I right?…It will turn into a real celebration."[16]

Opportunities for Tactical Application and Targeting

Certain biological agents can be applied via direct contact, and in ways in which the victim would be unaware at the time of exposure. For maximum effect, a biological weapon would be delivered in an aerosol form above a large target population. However, to avoid the added technological challenge of aerosolization, not to mention the additional problem of concealing bulky metallic spray devices, a terrorist could simply opt for a liquid solution (or "slurry") that would fit into a small glass vial. There is no unattended "suspicious package," nor any obvious sign that an attack is taking place at all. Biological weapons delivered this way are easy to transport, easy to hide, and are virtually invisible to our current detection methods.

Selecting a pathogen such as *variola major*, also known as smallpox, would make it even easier to carry out an attack without fear of detection or retaliation. Despite suspenseful plots portrayed by the entertainment industry, smallpox spreads rather slowly. On average, each untreated case can infect approximately five other people in the two-week symptomatic phase.[17]

Smallpox has a two-week incubation stage during which the victim has no real symptoms, followed by a two-week active stage during which the victim has significant symptoms and is contagious, followed by either death or recovery. The normal fatality rate for smallpox is 30%.[18] At the moment, *variola major* is only officially held in two repositories: at the Centers for Disease Control (CDC) in the United States and by Russia's Vector program.[19] Nonetheless, some analysts believe that at least five other countries have samples prepared, and that some of those samples have been "manipulated" in such a way as to make them more contagious, more lethal, or both.[20]

Due to the long incubation stage, anyone infected with the virus could hypothetically travel a great distance before becoming seriously ill, allowing for a broad dispersion to multiple victims. An appropriate tactical target for such a pathogen would be an indoor location occupied by large groups of people who are all in transit to different locations. Grand Central Station in New York City, O'Hare airport in Chicago, and L'Enfant Plaza in Washington, D.C. all come to mind. Holiday season travel would be most advantageous for terrorist planners, as there would be a greater likelihood that first-generation victims would be indoors and in close proximity to small groups of family when they begin the symptomatic and infectious stage two.

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Complex statistical outbreak and treatment scenarios exist,[21] but a quick estimate of the death toll of an attack with smallpox might look like this:

Table 2: Death Toll of an Intentional Smallpox Outbreak

Scenario	Infected	Fatalities
3 attack sites, 100 people infected at each site before discovery of the first case.	300	0
300 infected people infect approximately 1500 more before CDC and medical community can react. 30% of original cases are fatal.	1800 – 90 fatalities = 1710	90
CDC isolates and successfully treats 75% of active cases. 30% fatality for untreated cases.	1710 x 0.25 = 427	427 x 0.30 = 128
CDC locates and successfully treats remainder of cases.	299	0
Outbreak contained.	0	218

The death toll in this case would be much smaller than that of 9/11, but it would nonetheless be effective in generating terror and in compelling a government crisis response. Thousands would be indirectly affected, hospitals and medical systems would be overwhelmed with the "worried well" (those who go to the hospital thinking they are infected when, in fact, they are not), and billions of dollars would be potentially lost in containing the event, and in absorbing the surrounding political and economic fallout.

Conclusion

The possibility of a terrorist attack utilizing biological weapons is an extremely relevant and valid concern. Islamist jihadist strategy demands the infliction of terror and death on non-believers. While it is difficult to provide irrefutable evidence, all signs indicate that they either have the capability or will in the near future. There is no way to reliably predict

when such an attack might occur, but the conditions under which it might occur are coalescing into an increasing probability of attack.

Islamist terrorist groups, like the one represented by Usama bin Ladin, clearly intend to carry out whatever form of attack has the greatest impact on the people and policies of the United States. If they succeed, they will gain additional legitimacy in the eyes of other world leaders. We may condemn the violence perpetrated by such groups on non-combatants, and we may refute their legitimacy as political bodies, but we ignore at our peril the threat they represent.

Strategically speaking, we must find ways to reduce or eliminate the logical appeal of biological and other forms of terrorism as a means to an end, either by deterring, discovering, or destroying such efforts or by instituting sufficient homeland protective measures. Perhaps more importantly, we must discover what factors contribute to the global movement of Islamist jihad and find ways to minimize or eliminate those factors as significant motivators, in order to slow down and then overcome the momentum of the movement itself. The most important of these factors is undeniably the utility of violence in obtaining legitimacy-by-force.

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About the Author

Scott Cary is a distance-learning student at the U.S. Naval War College, currently enrolled in two courses: Joint Maritime Operations, and Counter-Terrorism. He holds two Master's degrees: an MA in Psychology from Northwestern University, and an MBA from Johns Hopkins University. He is currently employed with the City of Washington, D.C. Mr. Cary can be reached for comment at: *scott.cary@dc.gov*.

References

1 David Alan Alexander and Susan Klein, "Biochemical terrorism: too awful to contemplate, too serious to ignore," *British Journal of Psychiatry*, 183 (2003): 491–497.

2 "Human Behavior and WMD Crisis/Risk Communication Workshop," Co-sponsored by the Defense Threat Reduction Agency, Federal Bureau of Investigation, and the U.S. Joint Forces Command, March 2001.

https://digitalcommons.usf.edu/jss/vol2/iss3/2
DOI: http://dx.doi.org/10.5038/1944-0472.2.3.2

3 Holloway, Norwood, Fullerton, Engel, and Ursano, "The Threat of Biological weapons: Prophylaxis and Mitigation of Psychological and Social Consequences," *Journal of the American Medical Association*, 278 no. 5 (August 1997): 425–7.

4 Cleto DiGiovanni, Jr., "Domestic Terrorism With Chemical or Biological Agents: Psychiatric Aspects," *American Journal of Psychiatry*, 156 no. 10 (October 1999).

5 Interview with Reynold Salerno, Ph.D., International Biological Threat Reduction, Sandia National Labs, January 8, 2009.

6 U.S. Department of State, Country Reports on Terrorism, 2006, available at: *http://www.state.gov/s/ct/rls/crt/2006/*.
See also U.S. Department of State, Country Reports on Terrorism, 2007, available at: *http://www.state.gov/s/ct/rls/crt/2007/index.htm*.

7 Paul K. Kerr, "CRS Report For Congress: Nuclear, Biological, and Chemical Weapons and Missiles: Status and Trends" *Congressional Research Services*, February 20, 2008, available at: *http://www.fas.org/sgp/crs/nuke/RL30699.pdf*.

8 GD Koblentz, "Biological Terrorism: Understanding the Threat and America's Response," in *Countering Terrorism: Dimensions of Preparedness*, eds. Howitt and Pangi (Cambridge Massachusetts, The MIT Press, 2003).

9 James S. Jaehnig, "Why The United States Underestimated the Soviet BW Threat," (Thesis, Naval Postgraduate School, Monterey, CA, September 2006), available at: *http://tinyurl.com/nx2yjm (www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA457274&Location=U2&doc=GetTRDoc.pdf)*.

10 Arnold M. Howitt and Robyn L. Pangi, "Countering terrorism: Dimensions of Preparedness," (Cambridge, Massachusetts: Harvard University, 2003).

11 DiGiovanni, (1999).

12 Eli Lake, "Al Qaeda bungles arms experiment," *The Washington Times*, January 19, 2009, available at: *http://tinyurl.com/6st4yk (www.washingtontimes.com/news/2009/jan/19/al-qaeda-bungles-arms-experiment/)*.

13 Vincent M. Cannistraro, "Terrorism and Weapons of Mass Destruction," available at: *http://tinyurl.com/kjzh5k (www.frstrategie.org/barreFRS/publications/colloques/20021212/20021212-1.doc)*.

14 Jerry Gordon, "Al Qaeda Bio-Weapon threat to America," *The Iconoclast*, June 3, 2009, available at: *http://tinyurl.com/mnr9xz (www.newenglishreview.org/blog_display.cfm/blog_id/21244#CurDomainURL#/blog.cfm)*.

15 Sara Carter, "Al Qaeda Eyes Bio Attack From Mexico," *The Washington Times*, June 3, 2009, available at: *http://tinyurl.com/pc43t3 (www.washingtontimes.com/news/2009/jun/03/al-qaeda-eyes-bio-attack-via-mexico-border/)*.

16 Ibid.

17 "Dark Winter" live tabletop attack scenario produced by University of Pittsburgh Medical Center, Center for Biosecurity, June 2001, available at: *http://tinyurl.com/dn2hs6 (www.upmc-biosecurity.org/website/events/2001_darkwinter/index.html)*. See also, Center for Infection Disease Research and Policy (CIDRAP) website, available at: *http://tinyurl.com/mfdkk9 (www.cidrap.umn.edu/cidrap/content/bt/smallpox/news/smallpoxtrans121701.html)*, and Raymond Gani and Steve Leach, "Transmission potential of smallpox in contemporary populations," *Nature* 414 (December 13, 2001): 748–751, available at: *http://www.nature.com/nature/journal/v414/n6865/abs/414748a.html*.

18 Centers for Disease Control and Prevention, "Smallpox Disease Overview," *Smallpox Fact Sheet*, available at: *http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp*.

19 Richard Black, "Smallpox vaccine to be retained," *BBC News*, January 11, 2002, available at: *http://news.bbc.co.uk/2/hi/health/1756360.stm*.

20 See reference #19.

21 Martin I. Meltzer, Inger Damon, James W. LeDuc, and J. Donald Millar, "Modeling Potential Responses to Smallpox as a Bioterrorist Weapon," *Emerging Infectious Diseases*, 7, no. 6 (2001), available at: *http://www.cdc.gov/ncidod/eid/vol7no6/meltzer.htm*.

https://digitalcommons.usf.edu/jss/vol2/iss3/2
DOI: http://dx.doi.org/10.5038/1944-0472.2.3.2