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Alternate Warfare: The Unseen Weapons of Mass Destruction

Elyse Keener
Liberty University

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“Germs don’t respect borders, so biological threats – manmade and naturally occurring – can quickly have global impacts.”¹ This quote from the Nuclear Threat Initiative poignantly describes the alarming power of biological forces throughout history, from the Black Death in 1347 to COVID-19 in the present day. If any lesson should be learned from the massive spread and indiscriminate death toll of these pandemics, it is that these diseases cannot be controlled by man. However, that does not stop man from trying. Biological weapons, though technically outlawed, are a major national security issue as foreign governments attempt to weaponize biology. To fully understand the threat that biological weapons pose for both the United States and the entire international community, one must understand the definition of biological warfare and weapons, how the international legal framework of biological warfare has changed over the years, the various historical uses of biological weapons, and the current status of biological weapons programs in major countries such as Iran, China, and Russia. A holistic understanding of biological warfare allows for thorough analysis of the current COVID-19 crisis and the implications were it to be weaponized. Through both the study of biological warfare and the analysis of a current pandemic, it becomes clear just how critical it is to keep biological weapons out of the hands of nefarious actors and outlawed in the realm of warfare.

When weapons of mass destruction (WMDs) are mentioned, people typically think of nuclear weapons but another class of WMD is just as, if not more dangerous: biological weapons. According to the Nuclear Threat Initiative, the first criterion for biological weapons is that they use microorganisms and naturally occurring toxins to infect people, animals, or plants.² This means that biological weapons can affect obvious targets like people, but also lesser considered targets such as the agriculture and livestock industries. Biological weapons can be used to obliterate entire industries. Because symptoms of a disease are relatively slow to set in, it is very difficult to identify the origin and the perpetrator, as well as to stop the spread of the disease. The second criterion for biological weapons is that they must have a delivery system. This can be anything from a bomb or missile to waterways, infected humans or animals, or insects.³ When a nefarious actor uses insects as a delivery system, it is its own category of biological warfare called "entomological warfare." Insects have been used as weapons for thousands of years in various forms, like venomous insects, crop-destroying insects, and disease-infested insects. Entomological warfare is now more frequently a source of technological innovation rather than a legitimate tactic.⁴ As seen throughout history, entomological and other kinds of biological warfare are attractive to nefarious actors, including both nation-states and terrorist organizations, as they present an opportunity for mass destruction for minimal effort.

There are many historical uses of biological warfare, from ancient times to the modern era. One of the first suspected instances of biological warfare occurred in 1346 during the Siege of Caffa. Mark Wheelis, a professor at the University of California, reviewed a 14th-century account discussing the details of the attack. During the time of the Plague, also known as the Black Death, tensions had been rising between the Italians and Mongols living in Caffa, and it

¹ “The Biological Threat.” Nuclear Threat Initiative. Last modified December 30, 2015. <https://www.nti.org/learn/biological/>.

² Ibid.

³ Ibid.

⁴ Gott, Ryan C. “The Sting of Defeat: A Brief History of Insects in Warfare.” *Entomology Today*, Last modified July 13, 2018. <https://entomologytoday.org/2018/07/13/sting-defeat-brief-history-insects-entomological-warfare/>.

had been a site of conflict for years already. By 1344, the tensions spilled over resulting in the Mongols sieging Caffa. This siege was stopped by Italian reinforcements, but that did not stop the Mongols from attacking Caffa again in 1345. This is when the reports of a “mysterious illness” began to occur. In the account Wheelis analyzed, it was reported that the Mongol army started to catch a disease that nobody could figure out how to cure and to rid their camps of the bodies and in an attempt to kill everyone in Caffa with the “intolerable stench,” the Mongols started catapulting the bodies over the walls of the city. The disease spread. It infected the people, producing mass casualties, and the water supply, making the disease nearly impossible to escape. Eventually, the Mongols relented, but only because the disease had decimated their forces.⁵ Though the Mongols seem to have thrown the bodies over the walls of the city more out of desperation than as part of a carefully calculated strategy, their attempts to use the disease to kill those inside Caffa were successful, but not before the disease had ravaged their army as well. This would not be the last time biological warfare has been used, though the use of biological weapons grew steadily more strategic and developed, as seen in World War II.

While WWII began because of the Nazis in Germany, before it ended the Pacific theater experienced many atrocities of its own. One of the many horrifying aspects of how Japan fought in WWII was their Unit 731, a secret group dedicated to developing biological weapons. Jeanna Guillemin discusses this in her book about Japanese germ warfare. Japan had been at war with China for several years but had not been making the advancements that Japanese leadership wanted. Because of that, they resorted to non-traditional solutions. Around 1940, the Japanese army oversaw a covert biological warfare research center and its director, Dr. Ishii Shiro, brought a very nontraditional idea to Japanese leadership: dropping fleas infected with the plague from planes onto cities in China. The proposal was accepted. The first instance of the flea-dropping occurred on October 27, 1940, and the first diagnosis of the plague was on October 29, 1940. At least 26 innocent civilians died in the next five days. The tactic seemed to work, so the program soon grew into what was later identified as Unit 731, and Ishii started thinking of ways to use other diseases, such as anthrax, cholera, and typhus, as weapons.⁶ As if infecting whole cities of people with the plague was not horrible enough, what was going on behind the scenes of Unit 731 was far worse. As reported by the New York Times in 1995, not only were they developing biological weapons, they were also doing human experiments and testing their weapons on innocent Chinese civilians. Over 3,000 people were killed by Unit 731’s experiments, including children. What was Japanese leadership’s justification for these atrocities? According to the New York Times, “...Japanese officials were impressed that germ warfare had been banned by the Geneva Convention of 1925. If it was so awful that it had to be banned under international law, the officers reasoned, it must make a great weapon.”⁷ The United States was barely spared from Japan’s biological warfare; Operation Cherry Blossoms at Night, a plan to infect California with the plague, was set to happen on September 22, 1945.

⁵ Wheelis, Mark. “Biological Warfare at the 1346 Siege of Caffa.” *Emerging Infectious Diseases* 8, no. 9 (September 2002). doi:10.3201/eid0809.010536.

⁶ Guillemin, Jeanne. “Prologue: General Ishii and German Warfare.” In *Hidden Atrocities: Japanese Germ Warfare and American Obstruction of Justice at the Tokyo Trial*, Xi–Xxii. New York: Columbia University Press, 2017. Accessed April 16, 2020. doi:10.7312/guil18352.3.

⁷ Kristof, Nicholas D. “Unmasking Horror -- A Special Report.; Japan Confronting Gruesome War Atrocity.” *The New York Times*, March 17, 1995. <https://www.nytimes.com/1995/03/17/world/unmasking-horror-a-special-report-japan-confronting-gruesome-war-atrocity.html>.

Fortunately, Japan surrendered just a month before the planned attack.⁸ Biological weapons, as recognized by Japanese leadership during WWII, have the potential to cause extreme harm while also producing fear in those being attacked. Biological weapons are surrounded by unknowns, making them all the more attractive to nefarious actors like terrorists.

The first time the United States faced the full brunt of a terrorist attack was on September 11, 2001. It was not long after that the United States was hit with another terrorist attack, this time biological. On October 5, Bob Stevens died of anthrax and was later identified as the first victim of a series of anthrax attacks. Over the next month and a half five people died and 17 more became sick because of anthrax. Targets of the attacks included Tom Brokaw, an anchor for NBC, Senators Tom Daschle and Patrick Leahy, and several New York post offices. People got sick from both cutaneous and inhalation anthrax, which enter through the skin and lungs respectively, and all five people who died were infected through inhalation anthrax, which is the most dangerous form. The case is somewhat open-ended as one of the FBI's persons of interest committed suicide before he was indicted, and the agency's other person of interest was later exonerated. It is important to note that all of the FBI's suspects were bioweapons researchers, people with access and knowledge to biological agents.⁹ This kind of attack indicates its perpetrator was someone with knowledge that anthrax is categorized by the CDC as a Tier 1 agent, meaning it represents the highest level of danger to a variety of targets, namely people, the economy, and critical infrastructure.¹⁰ Whatever the reason behind such a terrorist attack, it struck fear into a nation already in shock from 9/11. In this case, because anthrax is a toxin rather than a bacterial infection, it did not spread like the plague (discussed in the previous examples). However, it proved equally dangerous as a biological weapon, not just because of the physical effects but the psychological effects as well. With that said, biological weapons have the potential to rapidly spiral out of control, making clear and strict regulations necessary.

Because biological weapons are a clear threat to the entire international community, they require international law to govern them. Simply put, biological weapons are generally outlawed by international regulations. However, numerous conventions and treaties are behind this seemingly broad ban. The *Customary International Humanitarian Law, Vol. II: Practice* details each of the hundreds of individual regulations, laws, agreements, and treaties regarding biological weapons, but the international agreements are most relevant.¹¹ The issue of regulating biowarfare was first raised in 1925 with the Geneva Gas Protocol. This treaty bans asphyxiation, poisonous and other types of gas and extends "this prohibition to the use of bacteriological methods of warfare," or biological weapons.¹² Most countries signed this treaty. One important detail about the agreement is that it did not prohibit nations from developing or stockpiling biological weapons.¹³ This loophole is what led to the next major treaty concerning biological warfare: the

⁸ Kristof, Nicholas D. "Unmasking Horror -- A Special Report.; Japan Confronting Gruesome War Atrocity." *The New York Times*, March 17, 1995. <https://www.nytimes.com/1995/03/17/world/unmasking-horror-a-special-report-japan-confronting-gruesome-war-atrocity.html>.

⁹ "2001 Anthrax Attacks Fast Facts." CNN. Last modified June 11, 2019. <https://www.cnn.com/2013/08/23/health/anthrax-fast-facts/index.html>.

¹⁰ "The Threat." Centers for Disease Control and Prevention. Last modified August 1, 2014. <https://www.cdc.gov/anthrax/bioterrorism/threat.html>.

¹¹ Doswald-Beck, Louise, and Jean-Marie Henckaerts, eds. *Customary International Humanitarian Law*. Vol. 2. Cambridge: Cambridge University Press, 2005, 1607.

¹² Doswald-Beck, Louise, and Jean-Marie Henckaerts, eds. *Customary International Humanitarian Law*. Vol. 2. Cambridge: Cambridge University Press, 2005, 1607.

¹³ Stefon, Matt, ed. "Geneva Gas Protocol." Encyclopædia Britannica. Last modified September 30, 2019. <https://www.britannica.com/event/Geneva-Gas-Protocol>.

1972 Biological Weapons Convention (BWC).¹⁴ Like the Geneva Gas Protocol, the BWC does not completely outlaw the use of biological weapons; however, it does prohibit nations from possessing these kinds of weapons, making it impossible to use a biological weapon lawfully.¹⁵ Under Article I of the BWC, all nations that sign the agreement must never “develop, produce, stockpile or otherwise acquire or retain” biological weapons and delivery systems for biological agents or toxins.¹⁶ Additionally, the BWC prohibits nations from transferring biological weapon materials between nations or assisting other nations in accessing biological weapon materials. Once nations sign the treaty, they have nine months to destroy or reconfigure their biological weapons research for non-military use. Also significant about this treaty is that it does not prohibit states from developing defense and protection against biological weapons; it only prohibits the research, development, and deployment of offensive weapons. 183 nations have signed the agreement while only ten nations have not signed or ratified it. Notably, Israel is included in the group that has not signed or ratified the BWC.¹⁷ Though there are many other biowarfare rules and regulations, the BWC is the enduring crux of international agreement regarding biological weapons and as such, it is revisited every few years. The most recent review occurred in 2016, at which point no major changes were made.¹⁸ Unfortunately, because terrorist organizations resist international law, the threat of biological weapons is not completely eradicated by these regulations. Additionally, there have been and will likely continue to be violations of these regulations by various nations, including Iran, China, and Russia.

Despite the possession and use of biological weapons being outlawed, many countries seem to find the benefit of researching and developing them to be worth violating international law. The first of these countries is Iran. According to the Nuclear Threat Initiative, Iran ratified the BWC on August 22, 1973, but since then, it has often raised suspicions about whether or not it is developing biological weapons. The biggest biological warfare-related threat that Iran poses is the potential for dual-use, meaning its civilian research could easily be reconfigured to develop biological weapons. Three facilities in particular could easily be covers for covert biowarfare research and development.¹⁹ First, the Pasteur Institute, established in 1920 and located in Tehran, is Iran’s primary facility for studying infectious diseases and producing vaccines and serums.²⁰ Second, the Razi Institute for Serum and Vaccines, established in 1925-26 and located in Karaj, also has a major focus on vaccines, as the name suggests, and predominantly studies human diseases and zoonoses, which are diseases transmitted from animals to humans.²¹ Both of these facilities produce large amounts of vaccines and antisera, a capability that could be used

¹⁴ “Rule 73. Biological Weapons.” IHL Database. Accessed April 16, 2020. https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul_rule73.

¹⁵ Ibid.

¹⁶ Doswald-Beck, Louise, and Jean-Marie Henckaerts, eds. *Customary International Humanitarian Law*. Vol. 2. Cambridge: Cambridge University Press, 2005, 1608.

¹⁷ Archy, Wanda, ed. “The Biological Weapons Convention (BWC) At A Glance.” Arms Control Association. Last modified March 2020. <https://www.armscontrol.org/factsheets/bwc>.

¹⁸ Ibid.

¹⁹ “Iran.” Nuclear Threat Initiative, Last modified January 2020. <https://www.nti.org/learn/countries/iran/biological/>.

²⁰ “Pasteur Institute.” Nuclear Threat Initiative. Accessed April 16, 2020. <https://www.nti.org/learn/facilities/311/>.

²¹ “Razi Institute for Serums and Vaccines.” Nuclear Threat Initiative. Accessed April 16, 2020. <https://www.nti.org/learn/facilities/314/>.

to produce large amounts of a biological agent.²² The third facility is the National Research Center of Genetic Engineering and Biotechnology. Founded in 1988 and located in Tehran, this facility plays a major role in developing genetic engineering in Iran.²³ Once again this seemingly harmless research could be applied to studying pathogens, specifically their ability to spread and resistance to treatment.²⁴ These are just a few examples of the many complex areas of research that could be reworked into something dangerous at a moment's notice, giving the rest of the world a reason to be suspicious of Iran's claims to not have any offensive biological weapons. Beyond that, history is not on Iran's side. In the past, the United States has asserted that Iran worked with Russia on biological warfare matters, held stockpiles of biological weapons, and had biological weapons ready for delivery by artillery or aerial bombs.²⁵ The Nuclear Threat Initiative's reporting is supported by the *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* which details the United States' assessment of why Iran likely possesses or is pursuing biological weapons. As mentioned previously, Iran's history with biological weapons raises many concerns and the nation has done nothing to support its claims of not pursuing biological weapons.²⁶ Iran lacks transparency and is inconsistent in its obligation to report on its biodefense capabilities. Additionally, the dual-use nature of many of Iran's health research and studies makes it difficult to distinguish between something innocuous and something dangerous; the United States maintains that the toxin research and production taking place in Iran is indicative of biological weapon production.²⁷ Unfortunately but not unexpectedly, Iran is not alone in its probable disregard for international law.

The next major offender of the BWC and other biowarfare regulations is Russia. When it was the Soviet Union, the nation signed both the Geneva Protocol and the BWC, and Russia inherited the obligation to these treaties. Once again, perhaps the largest concern with Russia is its potential for dual-use. Because of its robust biotechnology infrastructure, there is a clear capability for Russia to reconfigure their research into an offensive biological weapons program.²⁸ Many countries have similar dual-use potential, but there must be more evidence to raise suspicion that Russia is not obeying the BWC. As with Iran, past mistakes affect Russia's reputation now. According to the Nuclear Threat Initiative, despite ratifying the BWC in 1975, the Soviet Union continued to run an offensive biological weapons program for over fifteen years and there are no clear indicators that the program has been dismantled as is required by the treaty. Similarly worrying, since the fall of the Cold War most nonproliferation efforts have been

²² "Iran." Nuclear Threat Initiative, Last modified January 2020. <https://www.nti.org/learn/countries/iran/biological/>.

²³ "National Research Center of Genetic Engineering and Biotechnology (NRCGEB)." Nuclear Threat Initiative. Accessed April 16, 2020. <https://www.nti.org/learn/facilities/309/>.

²⁴ "Iran." Nuclear Threat Initiative, Last modified January 2020. <https://www.nti.org/learn/countries/iran/biological/>.

²⁵ Ibid.

²⁶ "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," U.S. Department of State, August 2019, 46–47. <https://www.state.gov/wp-content/uploads/2019/08/Compliance-Report-2019-August-19-Unclassified-Final.pdf>.

²⁷ "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," U.S. Department of State, August 2019, 46–47. <https://www.state.gov/wp-content/uploads/2019/08/Compliance-Report-2019-August-19-Unclassified-Final.pdf>.

²⁸ "Russia." Nuclear Threat Initiative. Accessed April 16, 2020. <https://www.nti.org/learn/countries/russia/biological/>.

focused on nuclear arms, not biological weapons, offering a sort of distraction to potentially disguise development in the biological realm. The focus was brought back to the biological warfare arena when the International Science and Technology Center (ISTC), founded in 1992 to redirect biological weapons scientists to research for more peaceful projects, attempted to form biowarfare agreements with Russia. Red flags were raised when Russia announced that they would pull out of the ISTC in 2011. A nation suspected of having biological weapons was now lacking in accountability and one of the only avenues for potential agreements. Russia consistently blocks the United States and allies from entering their microbiology facilities, particularly the Scientific Research Institute of Microbiology, the Center for Military Technical Problems of Anti-Bacteriological Defense, the Center of Virology, and the Scientific Research Institute of Military Medicine, all of which are run by the Ministry of Defense and were involved in Soviet-era biowarfare projects.²⁹ This barely scratches the surface of Russia's long involvement with biological warfare but there is plenty of evidence to raise concerns. Moreover, the *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* ultimately concludes that the United States is unable to say definitely that Russia has discontinued its Soviet-era biological weapons programs for many of the same reasons as previously stated.³⁰ Russia has let its metaphorical, biological cards show a few too many times, but other nations, like China, have maintained a level of secrecy regarding their biological warfare status.

Last but certainly not least, China's biological weapons potential has come screaming into full view in 2020. With the origins of COVID-19 still in question, a deeper look into China's past biological warfare capabilities and compliance is necessary. Similar to Iran and Russia, China signed both the Geneva Protocol and the BWC; however, due to the heavy biological attacks the nation suffered at the hands of Japanese Unit 731 during WWII, China has publicly pursued a strong biodefense program. This gives China extensive dual-use capabilities.³¹ If Chinese leadership knows how to defend against biowarfare, it follows logically that they probably also know how to launch such an attack. Additionally, it is suspected that China has some small biological weapons programs still running and it has given other nations, like Iran, some biological weapons materials as well. China maintains a strong stance that they do not have biological weapons and that they do monitor diseases and epidemics. Most of China's recent publicized developments have been to prevent disease, build a better defense against biological warfare, and discontinue the proliferation of biological weapons.³² On the other hand, in the *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, the United States assesses that China did run offensive biological weapons programs for about thirty years before they signed on to the BWC. China's activity since joining the BWC has not convinced the United States that China has done away with any previously assessed or suspected biological weapons programs. Moreover, China's attempts at building its biotechnology infrastructure as well as to join into scientific partnerships with other

²⁹ Ibid.

³⁰ "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," U.S. Department of State, August 2019, 48–49. <https://www.state.gov/wp-content/uploads/2019/08/Compliance-Report-2019-August-19-Unclassified-Final.pdf>.

³¹ "China." Nuclear Threat Initiative, Last modified November 2014. <https://www.nti.org/learn/countries/china/biological/>.

³² "China." Nuclear Threat Initiative, Last modified November 2014. <https://www.nti.org/learn/countries/china/biological/>.

countries, specifically those which present national security concerns to the United States, raise suspicion.³³ Even if the nations are sharing information regarding other biotechnological efforts, like those meant for the health sector or biodefense, China's dual-use capability enhances the danger of information sharing. China's biotechnological efforts have come under a microscope recently because of COVID-19 and it would be remiss to not consider the implications if China were weaponizing a disease like coronavirus.

COVID-19 has rocked the very foundation of the international community. Originating in China, there have many different theories about what exactly set off the pandemic. Some believe it came from a wet market, a marketplace where people gather to buy and sell fresh meat, seafood, and produce, while others believe it came from the virology lab in Wuhan,³⁴ and China tried to make people believe it came from some U.S. soldiers.³⁵ Regardless of the actual origin, it is worth analyzing the implications if it did come from the virology lab and if China was attempting to weaponize the virus. Most have rejected the theory that COVID-19 is a biological weapon,³⁶ and in reality, it probably was not intended to be. If it came from the virology lab, it was more likely an accident than on purpose as it is considered a natural strain, not lab-created.³⁷ One of the reasons the biological weapon theory was rejected was due to the idea that "setting off a global pandemic that will cripple the world economy and lead to millions of fatalities is a really terrible strategy for any country."³⁸ If one only considers this strategy from a shallow point of view, that may be true. However, if one digs deeper into the philosophy and the strategy of China, this strategy starts to make a little more sense on several levels. As shown previously, China has a history of offensive biological weapons development with no indication that the programs were ever dismantled. The nation could still have the capability to weaponize a virus-like coronavirus. Beyond that, according to the *Hundred-Year Marathon*, China's long-term strategy is to become a global hegemon by 2049, 29 years from now. They do not aim to achieve this position through military might, but rather economic prowess.³⁹ Creating a pandemic that begins in China and is spread from there, such as with COVID-19, would provide China the opportunity to recover first and then enter a global crisis with economic and humanitarian aid, putting themselves in a position to be regarded as a savior. Additionally, *Hundred-Year*

³³ "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," U.S. Department of State, August 2019, 45–46. <https://www.state.gov/wp-content/uploads/2019/08/Compliance-Report-2019-August-19-Unclassified-Final.pdf>.

³⁴ Campbell, Josh, Kylie Atwood, and Evan Perez. "US Explores Possibility That Coronavirus Spread Started in Chinese Lab, Not a Market." CNN. Last modified April 16, 2020. <https://www.cnn.com/2020/04/15/politics/us-intelligence-virus-started-chinese-lab/index.html>.

³⁵ Bajema, Natasha, and Christine Parthemore. "How to Counter China's Coronavirus Disinformation Campaign." Defense One, Last modified March 29, 2020. <https://www.defenseone.com/ideas/2020/03/how-counter-chinas-covid-19-disinformation-campaign/164188/>.

³⁶ Bajema, Natasha, and Christine Parthemore. "How to Counter China's Coronavirus Disinformation Campaign." Defense One, Last modified March 29, 2020. <https://www.defenseone.com/ideas/2020/03/how-counter-chinas-covid-19-disinformation-campaign/164188/>.

³⁷ Campbell, Josh, Kylie Atwood, and Evan Perez. "US Explores Possibility That Coronavirus Spread Started in Chinese Lab, Not a Market." CNN. Last modified April 16, 2020. <https://www.cnn.com/2020/04/15/politics/us-intelligence-virus-started-chinese-lab/index.html>.

³⁸ Bajema, Natasha, and Christine Parthemore. "How to Counter China's Coronavirus Disinformation Campaign." Defense One, Last modified March 29, 2020. <https://www.defenseone.com/ideas/2020/03/how-counter-chinas-covid-19-disinformation-campaign/164188/>.

³⁹ Pillsbury, Michael. *The Hundred-Year Marathon: Chinas Secret Strategy to Replace America as the Global Superpower*. New York: St. Martins Griffin, 2016.

Marathon also shows how China is adept at rewriting history. For example, the 1989 Tiananmen Square protests, with its pro-U.S. slant, are not talked about nor recorded in China's history books.⁴⁰ This is yet another reason that creating a pandemic, especially if they are successful at providing aid to other nations in the effort to stop the catastrophe, would not be out of the realm of possibility for China. They could wipe their negative contribution to the pandemic out of the history books, both at home and abroad, while forever enshrining its positive contributions. For these reasons, among many others, China might be attracted to developing a biological weapon that would have similar devastation as COVID-19, and as such, strict accountability and transparency needs to be required from China.

As seen in this study of biological warfare, its historical uses, its legality, and various regions' development of offensive biological weapons, it is more evident than ever that biological weapons are not an antiquity of the past, but rather an ongoing national security threat. Through COVID-19, the threat of biological weapons is all the more real. If this assumed organic virus can spread and affect as many people, economies, and infrastructures as it has, how much more damage could a targeted, intentional biological weapon do? Most importantly, it is vital to keep biological weapons under the strict regulations of the BWC and other guidelines and to demand vulnerability from foreign entities to preserve human lives. This alternate form of warfare is outlawed for a reason.

⁴⁰ Ibid.

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