

Pandemic Covid-19: Lessons for Bioterrorism

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ABSTRACT

From the Spanish flu to the pulmonary plague epidemic (1924, Los Angeles) and then to the “parrot fever” pandemic of 1930, to the more recent epidemics of SARS, Ebola, and Zika: the last century has seen a succession of pandemic alarms reminding us of the limits of our scientific knowledge, the role of human behavior and technologies in the emergence and spread of infectious diseases. Moreover, research suggests that future pandemics are inevitable.

Keywords: Bioterrorism, Covid-19, Pandemic planning, National security, Globalization

Pandemia Covid-19: lecciones para el bioterrorismo

RESUMEN

De la gripe española a la epidemia de peste pulmonar (1924, Los Ángeles) y luego a la pandemia de la “fiebre del loro” de 1930, a las más recientes epidemias de SARS, Ébola y Zika: el último siglo ha visto una sucesión de alarmas pandémicas que nos recuerdan los límites de nuestro conocimiento científico, el papel del comportamiento humano y las tecnologías en la aparición y propagación de enfermedades infecciosas. Además, la investigación sugiere que futuras pandemias son inevitables.

Palabras clave: Bioterrorismo, Covid-19, Planificación pandémica, Seguridad nacional, Globalización

2019冠状病毒病大流行：为生物恐怖主义提供的经验

摘要

从西班牙流感、肺鼠疫流行病（1924年洛杉矶）、1930年“鸚鵡热”大流行再到近期非典、埃博拉病毒和寨卡病毒流行

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病：上世纪已出现一系列大流行警报，提醒我们科学知识的限制、人类行为和技术在传染病出现和传播中发挥的作用。此外，研究暗示，未来大流行是不可避免的。

关键词：生物恐怖主义，2019冠状病毒病（Covid-19），大流行规划，国家安全，全球化

PART 1 - VIRUSES, WAR, BIOLOGICAL TERRORISM; HISTORY, PERSPECTIVES

Despite a century of medical progress, viral and bacterial disasters still surprise and frighten. In late 2019, alarming news from Wuhan, China, where an unknown virus was reported to cause pneumonia, started gaining international attention. Soon after, Wuhan was shut down in an attempt to contain the virus, only to discover it was already too late. As the new disease started spreading worldwide, in January 2020, Chinese researchers identified the virus: a new strain of deadly coronavirus. Covid-19 proves that we are still exposed to unknown and complex diseases.

From the Spanish flu to the pulmonary plague epidemic (1924, Los Angeles) and then to the “parrot fever” pandemic of 1930, to the more recent epidemics of SARS, Ebola, and Zika: the last century has seen a succession of pandemic alarms reminding us of the limits of our scientific knowledge, the role of human behavior and technologies in the emergence and spread of infectious diseases. Moreover, research suggests that future pandemics are inevitable.

Modernity has certainly increased the risk of pandemics, but has also generated a new risk, that of terrorism, and particularly bio-terrorism. Modernization multiplies interdependencies, increasing terrorism’s methodological practicality and attractiveness. At all levels, the increased complexity of society and the economy creates opportunities and vulnerabilities. Sophisticated transportation and mobility networks provide terrorists with means of communication and advertising. However, terrorism is neither a recent nor a static phenomenon. It has evolved over time, even if it retains many of its historical² characteristics, alongside with global developments: imperialism, the strengths and weaknesses of the state and the structure of the world economy. Terrorist ideologies are usually based on religion, ethnicity, nationalism or the vision of a charismatic leader. Terrorists often believe they can achieve their goals, and hope that the state they face will be too weak to stop them or prevent their actions.

2 Daniel Benjamin, “Le terrorisme en perspective,” *Politique étrangère*, no. 4, 2006, pp. 887-900.

Given the multiple discontents and frustrations of modernity, e.g., through the failures of the “market state,”³ terrorism is able to seduce entities of various orientations, allowing them to popularize their causes, to provoke or intimidate the power or their enemies, to impress or intimidate the public, and to reinforce the adherence of the faithful.⁴ But as terrorism has become more globalized, counter-terrorism has also evolved into a global geopolitical network. And because of the losses suffered by terrorist groups, biological weapons may become more attractive, especially with the spread of technologies that facilitate their conception and production.

Biological warfare agents are no longer limited to the battlefield, the military is no longer the only one at risk of biological attack. In some cases, these agents could be used on a new front: large metropolitan areas. To counteract the potentially devastating effects of an attack, it is necessary to understand the basic epidemiological concepts of biological agents used as weapons. As the Council of Europe explains:

“The Covid-19 pandemic demonstrated the vulnerability of modern societies to viral infections and their potential for disruption. The intentional use of a pathogen or other biological agent for terrorism can be highly effective and cause damage—both human and economic—on a much larger scale than ‘traditional’ terrorist attacks, paralyzing societies for long periods of time, spreading fear and mistrust far beyond the communities immediately affected.”⁵

Analyses of epidemic trends, their timing, forecasting, and reordering are crucial to design effective public health strategies. Historians may be surprised at the lack of preparedness for the Covid-19 crisis, as epidemics have shaped human history, including military conflicts, creating strategic challenges. Preparedness is necessary here because its absence in the event of an epidemic leads to impotence.

3 Bobbitt discusses the evolution of the modern state, and in particular, “the relationship between the art of war and the legal order insofar as this relationship conditioned and transformed the modern state and the society that states composed.” Wars and the concomitant revolutions in the military field have been the driving forces behind the change in the constitutional order of states since the Renaissance: “Each of the important revolutions that have occurred in military affairs has brought about a political revolution in the fundamental constitutional order of the state.” He traces the historical evolution of the state in model terms. Six constitutional orders have succeeded each other since the Renaissance, he says: 1) “Princely State,” 2) “Royal State,” 3) “Territorial State,” 4) “Nation-State,” 5) “Nation-State,” and finally, 6) “Market-State” as a likely emerging model. The shift to “market-state” does not mean that the state will necessarily disappear for the simple reason that the market needs the state. Philip Bobbitt, *Terror and Consent: The Wars for the Twenty-First Century*, Knopf, New York, 2008, pp. 189-198. Philip Bobbitt, *The Shield of Achilles: War, Peace, and the Course of History*, Knopf, New York, 2002.

4 Martha Crenshaw, “The Causes of Terrorism,” *Comparative Politics*, vol. 13, July 1981, pp. 379-399.

5 Council of Europe, “*The Council of Europe continues working to enhance international co-operation against terrorism, including bioterrorism*,” Strasbourg, 25 May 2020.

True preparedness requires multiple commitments across geographic and organizational boundaries.

Pandemics create urgent demands and needs in the face of limited resources. To be effective in a real event requires skills and plans to be in place before the crisis itself. It is imperative to develop and implement clear measures, both at the individual and public level. The ultimate goal of pandemic planning is twofold:

(a) reduce the morbidity and mortality rates of the disease, and (b) reducing the recovery time so that economic and social activities can return to their usual level.

Vaccinations, if available, and behavioral practices are crucial to limit the spread of infection. Although diseases can cause moral panic in the absence of a cure, little attention has been paid to the psychological factors that influence pandemic spread, emotional distress and social chaos, factors that in turn affect public health. Scapegoating, violence and “class hatred in times of epidemic” are then a common response, as a means of expression for fears, hatreds and tensions. However, it is difficult to support the idea that “blame has always been the means of making mysterious and devastating diseases understandable, and therefore perhaps controllable.”⁶

Psychological factors matter for a variety of reasons. They play a role in the failure to comply with vaccination and hygiene programs, and in the reaction of populations to infections and associated losses, as xenophobia has marked modern-day epidemics. In 1900, San Francisco suffered from a bubonic plague imported by sea, “public health efforts then suffered from limited scientific knowledge, and the twin demons of denial and discrimination.” Instead of offering treatment, Mayor James D. Phelan stoked fear of the city’s Chinese, calling them a “constant threat to public health,” a prelude to the present “foreign virus” rhetoric: his policies actually made the epidemic worse. Similarly, Henry Gage, governor of California, denied the existence of the plague, fearing that the economy would suffer as his fellow citizens died.⁷

Psychological factors help to understand and manage the societal problems associated with pandemics: the spread of excessive fear in populations at risk of infection. In the event of a pandemic, planning must therefore include psychosocial reactions, including panic, emotions, and defensive reactions, which are psychosocial vulnerabilities that contribute to disease and distress.⁸ An adapted response

6 Dorothy Nelkin & Sander L. Gilman, “Placing blame for devastating disease,” in Arien Mack (ed.), *Time of Plague: The History and Social Consequences of Lethal Epidemic*, University Press, New York: 1991, p. 40.

7 Marilyn Chase, *The Barbary Plague: The Black Death in Victorian San Francisco*, Random House, New York, 2004, see Prologue.

8 Steven Taylor, *The Psychology of Pandemics: Preparing for the Next Global Outbreak of Infectious Disease*, Cambridge Scholars Publishing, 2019.

is crucial, because despite the underlying social-political controversies, circumstances, the severity of the symptoms, spreading quickly or not, the pandemics actually do not necessarily provoke violence and hatred.⁹

By their very nature, the characteristics and consequences of future pandemics, including Covid-19, are hardly predictable. However, this uncertainty should not be an excuse for a lack of planning, but rather underscore the need for comprehensive and flexible plans for inevitable future pandemics. Improving your organization's preparedness to function during a pandemic will help you anticipate future events.

Preparedness requires cooperation and collaboration on many levels, with individuals needing to protect themselves and their families; employers needing to devise strategy changes to prevent the spread of disease in the workplace and school; and health care providers and government agencies needing to test themselves and their environments.

Long before Covid-19, virologists were predicting other pandemics, perhaps from some kind of flu, with potentially devastating consequences. Epidemiologists and public health officials were calling for concrete plans to deal with the early months of a pandemic. In 2005, soon after the SARS outbreak, Michael Osterholm, director of the *Center for Infectious Disease Research and Policy*, wrote that influenza pandemics have occurred many times in history—10 in the last 300 years.

They cannot be avoided, but their impact may be reduced. A detailed operational plan should involve private sector food producers, medical suppliers, public health providers, law enforcement, and emergency managers. Most importantly, the plan should anticipate the disruption or even “collapse of global trade associated with

9 In striking cases, pandemics have done the opposite, as evidenced by the epidemics of unknown causes in antiquity, the great influenza of 1918-1919, and yellow fever in many cities and regions of America and Europe. These epidemic crises unified communities and healed wounds that had been deeply cut by previous social, political, religious, racial and ethnic tensions and anxieties. On other occasions, it is true, pandemics have divided societies through accusations and violence. Historians, physicians, and psychologists have yet to map when and where they occurred, to measure their intensities, or to examine the complex interplay of factors to explain why certain diseases were more or less exceptions. They have yet to raise the issues in a comparative framework of global epidemics. Studies of social violence, hatred, and disease have focused on a handful of pandemics—sometimes drawing parallels between the Black Death and cholera, in other places between syphilis and A.I.D.S., and sometimes two or three other diseases. Studies have not gone beyond these few pandemics to draw a comparative picture of disease and hate patterns. These studies have not compared levels of violence or intensity of hate with different pandemics in different places and times; instead, the hate potential of epidemics has been leveled. Existing studies have also failed to consider the extent to which certain characteristics of diseases—mortality rates, speed of death, novelty of a disease, mysterious causes, degrees of contagion, horror of signs and symptoms—determine whether a wave of collective hatred and violence is likely to ensue. Instead, in both popular imagination and scholarly literature, violent hatred is seen as the normal course of pandemics, supposedly rooted in timeless mental structures—certain mental structures, certain psychological constants. Cohn SK, “Pandemics: waves of disease, waves of hate from the Plague of Athens to A.I.D.S.,” *Historical Journal* (Cambridge), vol. 85, no. 230, November 2012, pp. 535-555.

the pandemic,” which would represent “the first real test of the resilience of the modern global distribution system.”¹⁰

Pandemic/epidemic and national security

Pandemics are potentially destructive and therefore frightening. Because they are fraught with uncertainty, they often provoke contention and conflict, as we saw during the Covid-19 crisis. Thanks to vaccines, more reliable medical service delivery, more effective communication, and a more educated public, however, some argue that the occurrence of a new black plague is highly unlikely.

However, we are now faced with new risks, allowing diseases to reach pandemic levels and affecting our ability to find the right response: fragmentation of the media, tribalization of knowledge, the increasingly troubling status of scientific and political expertise, growing worldwide mobility, and the globalization and commercialization of pandemic response systems.¹¹

Pandemics have reshaped societies for millennia. Similarly, the Covid-19 pandemic has shown us the importance of protecting ourselves from bacteria, germs and viruses. From tuberculosis to the avian flu and from HIV to coronavirus, these infectious factors share a common history: human interaction with animals. Known zoonotic (animal-to-human) diseases, these pathogens—both pre-existing and newly identified—have emerged and reemerged throughout history, causing epidemic-panic outbreaks and millions of deaths worldwide. These diseases must be considered from ecological, cultural, economic, and biological¹² perspectives.

Some countries have managed the recent crisis better than others, with few correlations with regime type. The factors for success in handling Covid-19 are the capacity of the state, the collective/social trust in government and effective leadership. Countries with these conditions have been able to limit the damage of pandemic.¹³ Countries with dysfunctional states, polarized societies or poor leadership have responded poorly, leaving their citizens and economies exposed and vulnerable. Especially in times of crisis, leadership (civilian and military) is crucial. In countries that mismanaged the Covid-19 crisis, the pandemic simply exposed pre-existing governance failures. Historians have traditionally identified aversion to adaptation with ineffectiveness in practice.

10 Michael T. Osterholm, “Preparing for the Next Pandemic,” *Foreign Affairs*, vol. 84, no. 4, July-August 2005.

11 Kristian Bjørkdahl & Benedicte Carlsen, *Pandemics, Publics, and Politics: Staging Responses to Public Health Crises*, Palgrave Macmillan, Basingstoke, UK, 2019.

12 David Waltner-Toews, *The Chickens Fight Back: Pandemic Panics and Deadly Diseases That Jump from Animals to Humans*, Greystone Books Ltd., 2007.

13 Francis Fukuyama, “The Pandemic and Political Order: It Takes a State,” *Foreign Affairs*, vol. 99, no. 4, July-August 2020.

Often, these analyses involve institutions rather than individuals because, historically, organizations have often failed to learn from the mistakes of others and have failed to anticipate or adapt to new or unexpected situations. Although psychological factors influence this decision-making process,¹⁴ President Donald Trump's personality and "tweeting politics" are not enough to explain the situation witnessed in the United States. In fact, "the obligation to adapt to unexpected circumstances tests both the organization and the system, revealing structural or functional weaknesses, the catastrophic potential of which may have been previously ignored."¹⁵

China has been effective. Its attempts to strengthen its position in the international arena during the Covid-19 crisis are simply a rehash of old methods, approaches and strategies, identical to those of other imperial powers. By definition, military and political control can be formal or informal. Driven by national interests, the Chinese are also motivated by strong ideological impulses or nationalist visions. Historians see science and medicine as a means of conveying imperialism and its applications.

Malaria and yellow fever suggested that blacks were immunized against these diseases, thus usable as slaves or convenient labor in unhealthy areas for whites. Watts examines the link between infectious diseases and imperialism and how imperialism used the fight against these diseases as a tool for intrusion and domination in underdeveloped regions and fragile states.¹⁶ China's attitude will be no different in this regard.

Pandemic/epidemic: definition

For humanity, the history of viruses is one of fear, ignorance, grief, sacrifice, and bravery. Pandemics have caused mass deaths and immense social disruption. Other "virgin soil" epidemics struck populations alien to these newly introduced microbes. In *Encyclopedia of Pestilence, Pandemics, and Plagues*, Byrne offers an overview covering individual diseases (HIV/AIDS, malaria, Ebola, and SARS): Major epidemics (the Black Death, sixteenth-century syphilis, nineteenth-century cholera, and the 1918-1919 Spanish Flu), environmental factors (ecology, travel, poverty, wealth, slavery, and war); and historic and cultural ef-

14 Psychological factors influence political decision-making, and include leaders' personalities and beliefs, leadership style, emotions, images, cognitive coherence, and use of analogies. Their impact is seen especially in decisions made in times of crisis; in governments where there is a strong leader; and, in a country that is newly formed or undergoing regime change. Alex Mintz & Karl DeRouen Jr., *Understanding Foreign Policy Decision Making*, Cambridge University Press, Cambridge, 2010.

15 Eliot Cohen & John Gooch, *Military Misfortunes: The Anatomy of Failure in War*, The Free Press, New York, 1990, pp. 161-162.

16 Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism*, Yale University Press, New Haven & London; 1999, p. 279, see also 207 and 241.

fects of disease (romanticism-tuberculosis relationship, closing of London theaters during plagues, effect of venereal diseases on social reforms).¹⁷

Despite the multiplicity of causes and the diversity of modes of transmission of their effects throughout history, pandemics have circulated across national borders and continents causing great human suffering. From the Black Death in Asia and Europe to the smallpox and polio epidemics that decimated the Americas, to the contemporary crises of HIV/AIDS and avian influenza, epidemics are a permanent feature of the world's¹⁸ societies.

“Pandemic” and “epidemic” have similar meanings. According to the *New Shorter Oxford English Dictionary*, an epidemic is a disease “customarily absent or rare in a population but causing outbreaks of high frequency and severity, or the temporary but widespread outbreak of a specific disease.” Although it is a “widespread disease,” there is no agreement on the extent or frequency of an epidemic. A pandemic is simply a worldwide or at least continent-wide epidemic. However, there is no quantitative measure of when an epidemic becomes a pandemic.¹⁹

Epidemics have been a concern since the 1990s: since then, the world has experienced a number of infectious diseases: SARS (severe acute respiratory syndrome); influenza A (H1N1); Middle East Respiratory Syndrome (MERS), a viral respiratory disease caused by a new coronavirus (MERS-CoV); Ebola virus; Zika virus; and Covid-19. Although more than 60% of the approximately 400 infectious diseases identified since 1940 are zoonotic, evidence suggests that the likelihood of pan-diseases has increased in the last century: travel, global integration, urbanization, and massive environmental exploitation.²⁰ New infectious agents may emerge wherever humans live, but studies suggest that the worst pandemics occur in tropical and subtropical regions.

The “hot spots” of (re)emerging infectious diseases are: Eastern China, Southeast Asia, East Pakistan, Northeast India, Bangladesh, Central America and in the tropical belt through Central Africa, from Guinea, Nigeria, DR Congo, Rwanda, and Burundi to Ethiopia.²¹

17 Joseph P. Byrne, *Encyclopedia of Pestilence, Pandemics, and Plagues, 2 Volumes*, Greenwood Press, Westport & London, 2008 (Preface by Anthony S. Fauci).

18 For a review of the major types of infectious agents and modes of transmission, including a historical overview of infectious diseases and attempts to control epidemics, see Barry Youngerman, *Pandemics and Global Health*, Facts On File, Inc, New York, 2008, pp. 3-27.

19 Niall Johnson, *Britain and the 1918-19 Influenza Pandemic*, Routledge, New York, 2006, pp. 25-26.

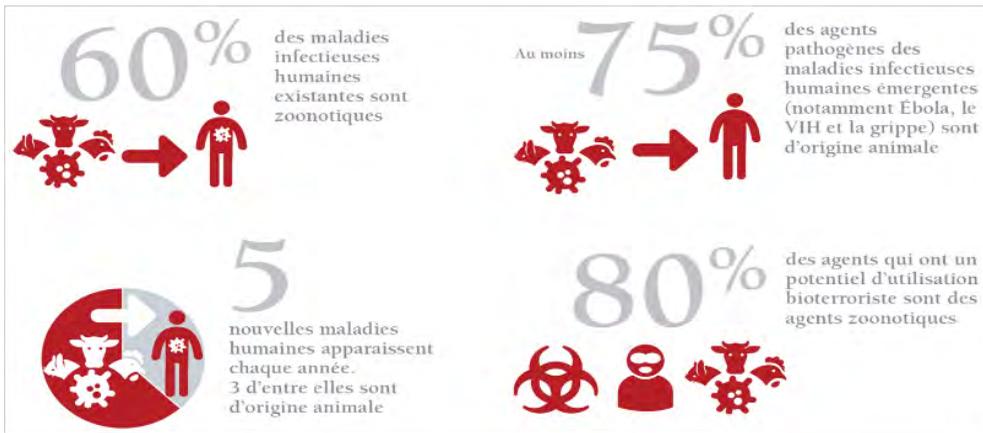
20 Stephen S Morse (et al.), “Prediction and prevention of the next pandemic zoonosis,” *The Lancet*, no. 380, 2012, pp. 1956-1965.

21 Kate E. Jones, Nikkita G. Patel, Marc A. Levy, Adam Storeygard, Deborah Balk, John L. Gittleman, & Peter Daszak, “Global Trends in Emerging Infectious Diseases,” *Nature* 451, February 2008, pp. 990-993.

Classification of the terms “outbreak,” “epidemic” and “pandemic”

Classification of terms		
Terms	Geographic distribution	Criteria
Outbreak	Localized (restricted)	Two or more cases (food or waterborne)
Epidemic (epidemic)	Community, State, Region	More cases observed than expected
Pandemic (pandemic)	Country, Continent, World	More cases observed than expected

Source: Eric J. Dietz & David R Black, *Pandemic Planning*, CRC Press, New York, 2012, p. xxviii.



<https://www.oie.int/fr/pour-les-medias/une-seule-sante/>

Apart from the fatal consequences for the direct victims, epidemics have negative social, economic, political and security consequences; worse, when the pandemic has a new pathogen, a high mortality/hospitalization rate and circulates easily. Unlike natural disasters, which suddenly destroy a limited area, infectious diseases have the terrifying power to disrupt daily life globally, drying up public and private resources and paralyzing trade and transportation.

In our world, it is ever easier to move people, animals, and materials around the globe, but these same logistical advances, have made epidemics and pandemics nearly unpreventable. And as the Ebola, MERS, yellow fever, Zika, and Covid-19 epidemics have shown, we are ill-prepared to deal with their fallout. What can and should we do, to protect humanity in such cases?

The term “pandemic”—an epidemic affecting various countries or continents and a mass of people—refers not to the severity of a disease, but to its ability to quickly infect a large geographic area. Less deadly than expected, the Covid-19 virus is highly contagious and often transmitted asymptotically. Ebola is deadly but difficult to track—victims die before they can transmit it. COVID-19, on the other hand, encourages people to neglect the disease, and so the virus has spread rapidly around the world, resulting in many deaths.

As a result, economies will recover slowly and in stages: the world will not return to its pre-COVID-19 state any time soon. Compared to the previous great plagues, this coronavirus pandemic is not as deadly as the Black Death (a term coined after 1800), which wiped out one third of the European population and drastically changed the lives of its survivors. This plague began to circulate across the European and Asian continents in 1347, causing immense devastation. The “Spanish Flu” epidemic of 1918 killed perhaps 50 million people worldwide. But the death rate relative to the total population was small compared to the impact of the Black Death, which killed 30% to 50% of the European population.²²

Epidemics, modernity and the “global era”

Our globalized and hyper-connected world, where billions of people travel billions of kilometers each year, makes the spread of disease even easier. But it also offers scientists and health actors facilitated access to new technologies, new opportunities to collaborate and new ways of dealing with these diseases. The coronavirus outbreak has disrupted the world’s daily life and led to increased levels of public surveillance and vigilance. What has made Covid-19 so dangerous is its combined with the fragility of the global economy after the post-2008 financial crisis.

Although lethal pathogens are usually quickly identified and controlled, the growth of high-speed transportation networks and the globalization of trade and travel have further accelerated the spread of disease. Indeed, many aspects of global society still make the world vulnerable to pandemic challenges. Already, the experiences of SARS and Ebola have shown how porous and fragile our public health systems are. The major characteristics of modernity—population growth, climate change, rapid transportation, the proliferation of mega-poles with inadequate infrastructure, war, persistent poverty, and growing social inequalities—contribute to persistently high-risk levels. None of these factors is likely to abate soon.

Covid-19 circulates faster in overcrowded urban concentrations lacking clean water and sanitation, which gives rise to new forms of urban,²³ political,

22 Norman F. Cantor, *In the Wake of the Plague: The Black Death and the World It Made*, Simon & Schuster, New York, 2001, pp. 6-7; see also John Kelly, *The Great Mortality: An Intimate History of the Black Death, the Most Devastating Plague of All Time*, Harper Perennial, New York, 2006.

23 The urban hierarchy has shifted from a place-based structure based on size to a relational structure based on urban networks. It reflects a distinction between somewhat idealized “flow spaces,” where function derives from extra-regional linkages, and more familiar “place spaces,” where most people live and function derives from linkages within a more or less bounded region. Whereas the city-regions of the past were self-contained markets that functioned as “functional hierarchies,” the new global city system is based on a “relational hierarchy”—it is the relationships between key city-regions of the world that matter. Cities such as New York, London, Shanghai and Tokyo are much more closely related to each other than, for example, New York and Louisville or Toronto and Edmonton. Such findings should not be interpreted as an affirmation of the death of territory/place at the hands of digitization and globalization. The growing importance of a network-based

economic, and social organization. The extra-regional connections between cities are long-standing, but technological advances in transportation are expanding the distances they travel, the number of cities they connect, the areas they include, and the number of problems they generate. Our cities thus experience multiple cycles of degeneration and renewal, often chaotic.

Cycles that are sometimes interrupted by a sudden and unpredictable event such as Covid-19 or war, aggravating the risk of epidemics. What does it mean for city dwellers when their city's infrastructures—communication, transportation, electricity, water, and sanitation networks—collapse? How do political corruption and mafias undermine the built environment? How will pandemics affect social structures and relationships to authority? How do drug trafficking and crime reshape class, race, and gender? What impact do they have on vulnerable urban environments? For example, while the precise origin of the Covid-19 global pandemic is still unknown, the illegal wildlife trade in China may have encouraged its emergence.²⁴

Urban populations are affected by violence, civil wars, drug trafficking, infrastructure collapse, and natural disasters, all of which weaken their immunity and resilience. Police forces may only have to respond to major incidents because of the loss of infected, quarantined personnel. Given the potential for social disruption, states may collude with organized crime to provide services and help maintain order. In Mexico, drug cartels provided food parcels to those in need during the pandemic;²⁵ in Brazil, gangs are countering a lack of control by imposing their own curfews.²⁶ Mexico City, New York, Beirut, Bangkok, Baghdad, and Saint-Denis are examples of cities that lack the quality of urban life that makes people vulnerable to an epidemic.

Epidemics and pandemics evolve for years, hidden behind massive ecological disruptions; they also take advantage of the erosion of public health infrastructures and public governance— amidst the failures of “millenarian capitalism.”²⁷ The market cannot perform the functions of government. The links between de-

urban hierarchy does not exclude the influence of a city's hinterland. Some places will be more closely linked to their own hinterland than to exotic international cities, and in this case spatially close territories remain quite important. While significant, this interpretation of transition is not absolute. Richard Florida, *The Great Reset: How New Ways of Living and Working Drive Post-Crash Prosperity*, Harper, New York, 2010.

24 Graham Readfearn, “How did coronavirus start and where did it come from? Was it really Wuhan's animal market?” *The Guardian*, April 28, 2020.

25 “Mexican Drug Cartel Gives Out Food to the Poor Amid Pandemic,” Organized Crime and Corruption Reporting Project (OCCRP), April 07, 2020.

26 Barretto Briso & Tom Phillips, “Brazil gangs impose strict curfews to slow coronavirus spread,” *The Guardian*, 25 March 2020.

27 Walter Russell Mead, *Power, Terror, Peace, and War: America's Grand Strategy in a World at Risk*, Knopf, 2004.

mocratization and the market are empirically uncertain. From the beginning of Western economic development, there has been a (largely hidden) tension between market and democracy.

The present variant of capitalism lacks meaningful redistributive mechanisms. Contrary to the “Washington consensus,” the market and the state are neither opposed nor alternative but linked by structural arrangements. Markets are always defined and governed by political and judicial institutions. The debate is about variation in institutional forms, not about domination of one over the other. The market presupposes a government that protects, directs, and controls. The foundations of the business world are political. Contrary to the globalist narrative, economic globalization was made possible by political change. But what politics has done, it can also undo.

Thus, since these trends will continue, let us look especially at policies to identify and contain emerging epidemics with pandemic potential, and investments to strengthen health preparedness and capacity. As a mirror of society, epidemics “are not random events that afflict societies in a capricious manner and without warning. On the contrary, each society produces its own specific vulnerabilities. To study them is to understand the structure of the society, its standard of living and its political priorities. In this sense, epidemic diseases have always been significant: the challenge of medical history is to decipher their meanings.”²⁸

Diseases are inherent to humanity, even if they do not all become epidemic. Sometimes, when the population is not immune, one of them becomes pandemic and affects human life for a long time. Other factors conducive to outbreaks of epidemics/pandemics are: poor hygiene, inadequate preventive methods, poor quality food, high population density, the increasing mobility of people, and also the way the disease itself is transmitted.

When Pericles died of the plague, Athens lost an important leader. His successors advocate another strategy, costly for the League of Delos. This episode of the Peloponnesian War shows the role of contagions and diseases in history; they have wiped out cultures and allowed others to prosper. Thus, disease has played a major role in wars of the past and could again in the present world—we must take steps now to be prepared.

National Security and Pandemic

National security is an amorphous and elastic concept that encompasses and relates to many issues and activities. Most definitions include the physical security of the individual and the state, and aim to preserve a certain pre-defined set of values and principles. Obviously, when these values are invoked, either directly (rights, laws) or indirectly (customs, habits), these defini-

28 Frank M. Snowden, *Epidemics and Society*, Yale University Press, New Haven & London, 2019, p. 7.

tions become subjective. Security is closely “linked to identity, and security policy to the construction of collective identity.”²⁹ In the temporal dimension, immediate threats motivate national security more than distant ones. In the same way, human threats seem more alarming to national security than natural risks.³⁰

These definitions explicitly separate “national security” from ordinary problems because of its urgent, existential or critical nature. Focusing on immediacy, coercion and the human factor, these definitions make “slow” issues (pandemics, climate change) difficult to access at the forefront of national security. For example, “the first plague pandemic, which lasted more than two hundred years,” was a key factor in the decline of antiquity and the early Middle Ages. Its sporadic persistence from 541 to 750 had immense consequences. However, there are no systematic studies of this first plague main geopolitical, cultural and linguistic studies of the Mediterranean world. Eight centuries before the Black Death, a plague pandemic ravaged the shores of the Mediterranean, spreading from eastern Persia to as far as the northern British Isles.³¹

The Spanish flu, which German and British soldiers called *Blitzkatarrh* and *Flanders Flu*, killed 50 to 100 million people and was global in scope. It ravaged the entire world—the United States recorded 550,000 deaths (five times its total military deaths in World War I), with European deaths exceeding two million. Even though entire Allied battalions and Germans were decimated, the reasons for the deaths of many servicemen were concealed to protect public morale.

Philadelphia ran out of gravediggers and coffins as mass burial trenches were dug with construction equipment. The Spanish flu raised the specter of the Black Death of 1348 and the Great Plague of 1665; the medical profession, ravaged by five years of conflict, was unable to contain and defeat this new disaster.³²

The Spanish flu struck 294,000 Allied soldiers in the fall of 1918 alone, causing major problems for both the Allies and the Germans. Historians and political scientists have argued that the flu helped defeat the Central Powers by striking German troops and devastating the Austro-Hungarian Empire.³³ For Spinney, the pandemic fueled the instability of the interwar period. It may also have changed

29 Bill McSweeney, “Identity and Security,” *Review of International Studies*, vol. 22: no. 1, 1996, p. 82.

30 The “security label” implies “urgency,” which identifies threats as sufficiently important to warrant emergency and exceptional measures, including the use of force. Barry Buzan, “New Patterns of Global Security in the Twenty-First Century,” *International Affairs*, vol. 67, no. 3, 1991, pp. 432-433.

31 Lester K. Little, “Life and Afterlife of the First Plague Pandemic,” in Lester K. Little (ed.), *Plague and the End of Antiquity: The Pandemic of 541-750*, Cambridge University Press, Cambridge, 2007, pp. 3-32.

32 Catharine Arnold, *Pandemic 1918: Eyewitness Accounts from the Greatest Medical Holocaust in Modern History*, St. Martin's Press, 2018.

33 David T. Zabecki, *The German 1918 Offensives: A Case Study in The Operational Level of War*, Routledge, 2006; Andrew T. Price-Smith, *Contagion and Chaos: Disease, Ecology, and National Security in the Era of Globalization*, The MIT Press, 2009.

the course of history by striking key leaders at important times—it worsened Woodrow Wilson’s health at the Paris Peace Conference of 1919.

They [*historians*] agree that he suffered a massive stroke the following October. His earlier bout with influenza was surely a contributing factor, they believe. He was unable to persuade the U.S. government to ratify the Treaty of Versailles or join the League of Nations. Germany was forced to pay punitive reparations, stoking the resentment of its people—something that could have been avoided if the United States had had a say. Making Wilson the major obstacle to its own goals, the Spanish flu could thus have contributed to World War II.³⁴

However, despite its devastation, the terrible Spanish flu seems to have been forgotten. In the popular imagination, it was an incident of the First World War. In the United States, as the crisis diminished, the pandemic also faded from the collective memory. Their helpless despair over the pandemic bothered these optimistic and progressive Americans. But for the survivors, the trauma was endless, their end of life marked by grief and mourning.³⁵

However, the association of “pandemic” and “threats” to national security re-emerged in the 1990s. Many leaders and publications warned of the danger of epidemics, called for a broad overhaul of traditional definitions of national and international security, and for a broadened vision of security that included infectious diseases, among others. The January 2000 Security Council meeting on AIDS was the first time in history that the UN addressed a health issue—a disease became a threat to international peace and security. The debate began with the *National Intelligence Council’s* assessment of the security risk posed by infectious diseases: “the continuing burden of infectious diseases may lead to economic decay, social fragmentation, and political destabilization in the most affected countries of the developing world.

The NIC warns that “over the next 20 years, new and re-emerging infectious diseases will threaten global health ever more.” It points out that “these diseases will threaten U.S. citizens at home, U.S. military personnel deployed abroad, and will exacerbate social and political instability in key countries and regions where the United States has important interests.”³⁶

(Re)emerging infectious diseases continue to threaten national and international security, and the present globalization and ecological changes accelerate the

34 Laura Spinney, *Pale Rider: The Spanish Flu of 1918 and How it Changed the World*, Public Affairs, New York, 2017.

35 Nancy K. Bristow, *American Pandemic: The Lost Worlds of the 1918 Influenza Epidemic*, Oxford University Press, Oxford, 2012.

36 National Intelligence Council (NIC), *The Global Infectious Disease Threat and Its Implications for the United States*, NIE 99-17D, January 2000, p. 5.

danger. Their negative effects on states threaten international security. However, these infectious diseases receive little political attention because their effects are small. Only certain infectious pathogens threaten national security, based on their lethality, transmissibility, and ability to cause economic damage.

A specific disease thus becomes a safety issue when it imposes an intolerable burden on society through morbidity, mortality, and public concern. The 2013 WHO updated guidelines emphasize instead “national risk assessments,” where each member state is urged to conduct its own.³⁷

While the safety-health nexus has created a global commitment to pandemic policies, the institutional, technical, and political challenges to achieving this goal are immense. The promise of a systematic analysis of the pandemic-safety nexus remains illusory. At least the work exploring this linkage includes human security, extending the notion of security beyond the state to include basic human needs: education and health. The concepts of “human security” and “national security” lead to competing views of security, as well as conflicting assessments of their importance which may threaten the lives of masses of people.

The security-defense community resists the arguments of the “globalisers,” whose appeal to human security contradicts traditional approaches to national and international security that focus on physical threats to the state. Their analysis focuses on the threats these diseases pose to the territorial integrity and security of the state. Given the flaws in the management of the Covid-19 pandemic, this pandemic/biological weapons debate must therefore be framed by traditional standards.

Globalization and “Panic in the City”

The evolution of biological warfare and the modern use of biological weapons is difficult to separate from the deliberate use of natural diseases. However, the potential of biological weapons in attacks was demonstrated by the massive disruption caused by the use of anthrax in 2001 in the United States. The threat of biological weapons has never been more important than in recent years³⁸ Especially since the basic knowledge to create biological weapons is more accessible in our world than ever before.

These concerns mainly originate from the increased risk of such weapons to be acquired and used by terrorists. In response, anti- and counter-terrorism strategies have been developed and implemented. Counterterrorism encompasses defensive measures to reduce the vulnerability of individuals and property to ter-

37 World Health Organization, “Pandemic Influenza Risk Management: A WHO guide to inform and harmonize national and international pandemic preparedness and response,” Geneva, May 2017, pp. 8-10.

38 William J. Broad & Judith Miller, “The threat of germ weapons is Rising. Fear, too,” *New York Times*, December 27, 1998.

rorist acts, and counterterrorism refers to offensive measures that prevent, deter, and respond to terrorism.

Because of the terrorist threat, the risk posed by various microorganisms becoming bioweapons needs to be assessed and the evolution in the use of biological agents better understood. Yet even as political and military leaders prepare for urban military operations in the globalized era, the perception of the links between cities and war has not yet penetrated the sphere of mainstream political narratives on security. Policymakers think “narrowly about domestic urban counterterrorism and defending critical infrastructure where police forces and emergency services prevail.”

They ignore “the fact that we face a future in which crises in global mega-poles will defy military resilience, demographic resources, and political will.”³⁹ This theory links urban violence to the need for meta-strategy versus geo-strategy; for it, “war, like everything else, is urbanized,” and conflict will occur first in “the strategic sites of our age: cities,”⁴⁰ with demographic and urbanization trends becoming so critical that urban activities will shape many of the critical security problems of the 21st century.⁴¹

As a framework for post-Cold War change, globalization gained prominence in the 1990s. For its defenders, this modern globalization paradigm is distinct from previous ones for it is “thicker and faster,” broader in scope, but also “faster, cheaper and deeper.”⁴² The discourse dominating most of the political-ideological spectrum is conveyed by the hyper-globalists, for whom globalization implies liberalization, universalization, deterritorialization, internationalization, and the rise of global networks of interdependence.

The main differences from previous globalizations are the increased interconnectedness due to the information revolution, liberalization, the expansion of international trade, the diminishing role of governments, and the ease with which technology helps transfer funds, information, and ideas across borders. It has made borders more porous, but not unimportant. Another implication of globalization is the shrinking of distances and the “space-time compression” in various ways, depending on the situation.

The circulation of capital, goods, data, and people creates uninterrupted transnational flows and networks. This allows for accelerated interactions, but also the production of identities disconnected from a distinctive local belonging. This temporal political-spatial process in fact erases old borders and globalizes national

39 Michael Evans, “War and the City in the New Urban Century,” *Quadrant*, no. 1-2, Jan-Feb 2009.

40 Stephen Graham, *Cities, War, and Terrorism: Towards an Urban Geopolitics*, Blackwell, Oxford, 2004, p. 4.

41 Tewfik Hamel, “La lutte contre le terrorisme et la criminalité: Un changement de paradigme?” *Global Security*, no. 5, 2016, pp. 45-79.

42 Joseph Nye, “Globalism Versus Globalization,” *The Globalist*, April 15, 2002.

security. All these facets of the globalization—paradigm refer to four related processes: expansion (stretching of activities), intensity (intensification of the aforementioned), speed (acceleration of interactions), and impact (increasing importance of actions and decisions in distant places).

When it comes to security, globalists (referring to the growing connection of the international system: the increasing flow of money, goods, information, and people) focus on globalization itself. “They see a world in which threats to the security of people,” which are inherently transnational, complement, if not replace, threats to the security of nations. Most see this process, not as the product of an invisible hand or unseen forces. “In addition to addressing the dark side of globalization, globalists argue for the need to exploit the opportunities it offers— by securing open markets.”⁴³

These globalists usually see a decline in wars between major powers and the rise of new security problems, including pandemics. For them, globalization causes serious social fragility, creates critical vulnerabilities and spreads violence and identity conflicts. Its various aspects potentiate other transnational dangers (first, in fragile states): proliferation of weapons, including weapons of mass destruction (WMD), cyber-attacks, nationalism, religious antagonism, ethnic violence, criminality, drug trafficking, the spread of infectious diseases, environmental degradation, and competition over resources.⁴⁴

They advocate for the theory of “world chaos,” according to which the armed forces are now being drawn into a guerrilla warfare affecting the national territory itself. A “panic in the city” scenario, stimulated by the possible use of chemical or biological weapons in urban areas, would involve an evolution of the missions of militaries. Warfare has left the battlefield and is infiltrating society. These “globalists” are worried about “chaotic conditions” created by asymmetric attacks on national territory. Historically, one of many tasks of the armed forces was to defend the population against the armies of other states.

A “catastrophic” attack (with WMD) is only the worst-case scenario. Even a “dirty bomb” would result in enormous losses, with widespread panic and disruption. Hence the inclusion in the threat spectrum of the risk to the population of previously unthinkable casualties caused by few foreign or/and domestic individuals. Civilians will not be able to bear the physical and psychological aspects of a “cataclysmic attack”: preparing for it and responding to it is clearly a military matter.

43 Ivo H. Daalder & James M. Lindsay, “Power and Cooperation: An American Foreign Policy for the Age of Global Politics,” in Henry J. Aaron, James M. Lindsay, & Pietro S. Nivola, *Agenda for the Nation*, Brookings Institution Press, 2003, pp. 299 and 303-304.

44 “In the field of international security, globalization has most often been associated with ecological degradation, refugee flows, international crime, uncontrolled proliferation, and religious fundamentalism. These are represented as ‘new threats’ that may ultimately lead to ‘global chaos’ or even ‘world war,’” writes Laurent Goetschel, “Globalisation and Security: The Challenge of Collective Action in a Politically Fragmented World,” *Global Society*, vol.14, no.2, 2000, p. 264.

Many original strategic theories have thus called for increased military involvement in homeland security, with its role limited to supporting the civil authorities. Proponents of the “panic in the city” scenario envisioned internal security as the preliminary, or even primary, mission of the armed forces. They argue that if the perception of a sanctuary national territory disappears during an attack, the population will panic and flee to safer areas.

To avoid this scenario, the military must consider the most plausible, transnational, and asymmetric threats to national territory including the use of panic as a weapon, not the least probable, as a classic response to external aggression. Important, but not dominant, strategists have embraced this vision of globalization, the orientation of which can be summarized as “chaos on the coast, panic in the city.”⁴⁵

Traditionalists dominate security and defense expertise, and believe that ethnic conflicts, the collapse of peripheral states, pandemics or environmental problems are not existential risks. The role of the strategist and theorist is to distinguish the ephemeral from the structural, and the focus on global chaos is typical of this drift. Although many humanitarian and environmental problems cross borders, nation-states—their governments, armies, laws and legitimacy—are and will remain the dominant force in world affairs. A world of interdependent states may differ from a world of highly independent states—which never existed—it is still a world of states. For these strategists favoring a State-centered analysis, the major threat comes from hostile nation-states.

That said, globalist theories are outside the mainstream of national security and foreign policy. At least for national security, these currents, including the idea of human security, have not dominated. “prevails in economics, realists and their belief in the primacy of states as arbiters of the security of the international system dominate in strategy: to what extent will the Covid-19 pandemic bring about a fundamental change?”

Impact of pandemics on international peace and security

Epidemics and pandemics can undermine the prosperity, legitimacy, structural cohesion, and of course, the security of states. The unpredictability of a serious infectious disease outbreak, its speed of spread, and public fears can lead to widespread disruption and prevent states from maximizing their economic power and governing as well as possible. At least 47 countries and territories around the world have already had to postpone local and national elections because of Covid-19.⁴⁶ This can lead to increased poverty, intrastate violence and

45 Sam J. Tangredi, “The Future Security Environment, 2001-2025: Toward a Consensus View,” in Paul J Bolt, Damon V. Coletta, Collins G. Shackelford, Jr. (eds.), *American Defense Policy*, Johns Hopkins University Press, 2005, p. 57.

46 Global overview of COVID-19: Impact on elections, *International IDEA*, Stockholm, Sweden,

political instability, with negative effects on regional economic and political stability, international relations and development. These inequalities lead to instability, and thus to tragedy.

What would make the situation even worse? The likelihood of war. Apparently, the option of war is different from the measures taken to fight Covid-19. By its very nature, war requires national mobilization, including manpower and soldiers in training camps, military bases, factories, mobilization zones, ships at sea, etc.: the opposite of what leaders are doing at home— the opposite of what the leaders are doing now, imposing social distancing. The worsening of Sino-American relations has little to do with Covid-19. Long before the pandemic, there were few official U.S. texts that did not mention China as an enemy, a challenge, or a rival.

Pandemics can foster political and economic discord between countries but are unlikely to generate major armed conflict. Examining the likely impact of Covid-19 on the risk of war, Posen believes that this pandemic is more peace-promoting. It impacts all major powers and restricts all opportunities for war. Conversely, it makes all governments more pessimistic about their short/medium-term prospects. Since states often go to war in the grip of excessive confidence, pessimism induced by a pandemic should promote peace. In *The Causes of War*, historian Geoffrey Blainey argues that

At their outset, most wars share a common characteristic: optimism; belligerents are usually optimistic about their chances of military success. When the elites on both or all sides are confident, they are more likely to take the plunge—and less likely to negotiate, believing that they will fare better by fighting. Peace is served by pessimism.⁴⁷

Wars (intra and inter-state) amplify problems caused by disease. They contribute to the spread of diseases and aggravate ensuing socio-economic consequences. They also disrupt traditional means of communication. Indeed, pandemics are exacerbated by conflicts. The UN Security Council notes that the reverse is also true: pandemics can cause or exacerbate instability. Its September 2014 resolution 2177 on Ebola in West Africa recognizes that “in the most affected countries, peacebuilding and development are at risk of being undermined by the Ebola epidemic.”

Furthermore, “the epidemic undermines the stability of the most affected countries and, if not contained, may lead to further civil unrest and social tensions, a deteriorating political climate and increased insecurity.” For the Council,

March 18, 2020, <https://www.idea.int/news-media/multimedia-reports/global-overview-covid-19-impact-elections>

47 Barry R. Posen “Do Pandemics Promote Peace? Why Sickness Slows the March to War,” *Foreign Affairs*, April 2020.

“the unprecedented scale of the Ebola epidemic in Africa constitutes a threat to international peace and security.”

The Ebola outbreak in West Africa has revealed weaknesses in the global strategy for pandemic control in geographical areas with reduced public health capacity. In human history, armed conflicts have been a major cause of death. They cause death and injury on the battlefield, but also displacement of populations, collapse of health and social services, and increased risks of disease transmission. Countries in conflict are potential areas for the emergence of new diseases (Ebola in Uganda) or the resurgence of old or rare diseases. Detection of new pathogens may be delayed and diseases may spread before control measures are in place—making it nonsense to “declare war” on Covid-19.

Resolution 1308 on HIV/AIDS recognized in 2000 “that HIV poses one of the most formidable challenges to the development, progress and stability of societies and requires an exceptional and comprehensive global response.” While both resolutions emphasized that these health crises can disrupt countries in society. With the current COVID-19, accusations about the source and spread of the virus have already intensified international tensions. The battle over Chinese masks is one example.

President Trump’s announcement of a travel ban on Europe was poorly received by trans-Atlantic allies. As friction between Washington and Beijing increases, Covid-19 has fueled conspiracy theories both in China and the United States. Some members of the U.S. Congress have called the disease the “Chinese coronavirus.” Senator Tom Cotton has even claimed that Covid-19 could be a Chinese biological weapon.⁴⁸

These attitudes are not new, as “there is a long history of ‘tainting’ the world. This has largely consisted of blaming outsiders, either those outside the majority population, outsiders residing in the community, or outsiders in general. “These are all forms of ‘the geography of blame,’ because we attach danger to places that we think can hurt us or cause us harm. As syphilis spread across Europe in the 15th century, for example, people looked for scapegoats. The Germans called it the “French disease” while the French called it the “Italian disease.” The historian Johnson wrote that some people described the disease as *foreignness*:

This externalization or projection of blame or guilt may be related to religious conceptions of illness as sinful or to the simple desire to find an explanation or scapegoat for a plague afflicting a community [...] this projection is natural ... there is a link between imagining the disease and imagining the stranger. It may lie in the very concept of evil, which is archetypally identical to the non-us, ‘the

48 Alexandra Stevenson, “Senator Tom Cotton Repeats Fringe Theory of Coronavirus Origins,” *New York Times*, Feb. 17, 2020.

stranger.’ What is wrong or unnatural cannot be of us, but must be of the ‘other.’ One of the clearest expressions of such an exteriorization of blame is when a geographical name is attached to a disease. The name suggests the origin and blame of the disease. It often refers to countries inhabited by people of a different race or to countries with a history of conflict.⁴⁹

This provoked a chaotic global response. A similar trend can be seen at the international level: a global rush to close borders, turning inward and scape-goating rather than multilateralism. Most countries turned inward, implementing travel bans, export controls, withholding or hiding information and marginalizing the World Health Organization (WHO) and other multilateral institutions. A major economic challenge facing humanity is the loss of production, which can never be recovered.

Hence the current situation is much more dangerous, and its potential impact may last much longer than the 2008 global financial crisis. The interconnect-edness of economies means that the loss of production in one region can lead to the shutdown of production elsewhere. Production losses also affect the bank-ing networks that provide loans to vulnerable companies. The combination of the banks’ exposure and the uncertainty about the duration of the crisis leads the banks to be very cautious. At work is the interaction of three networks: disease, production, and finance. Minimizing the damage requires an analogous combina-tion of policies:

- better coordinate disease containment to minimize production losses,
- identify critical links in production chains and ensure that they do not break down and cause cascading failures of companies,
- and step in to fill the lending gap caused by the growing credit freeze.

But politicians overwhelmed by the crisis are trying to deflect attention abroad, citing the belief that the real culprit in the crisis is globalization and sug-gesting that the only way to reduce vulnerability is to isolate ourselves from the world. Conversely, managing the pandemic requires a global and coordinated re-sponse among states, or the crisis will worsen with increasing costs to the global economy and public health.⁵⁰

49 Niall Johnson, *Britain and the 1918-19 Influenza Pandemic: A Dark Epilogue*, Routledge, London & New York, 2006, p. 152.

50 Jackson examines disease contagion, production networks, as well as financial propagation (the spread of economic crises between regions) and systemic risk. The pandemic shows how each of these areas is central and intimately connected. In an era of global networks, addressing the epi-demic requires a proactive response that takes into account these distinct and dependent domains. Matthew O. Jackson, *The Human Network: How Your Social Position Determines Your Power, Beliefs, And Behaviors*, Pantheon Books New York, 2019.

The danger lies in the uncooperative connection rather than in the connection itself. In contrast, doctors and scientists around the world have preferred to share information and resources.⁵¹ Because just as you can't treat a termite infestation by smoking one room in your house, focusing on a specific geographical may temporarily hinder the spread of the pandemic, but will not enable to control it.⁵²

Can the epidemic decide the outcome of the war?

Prevention, detection, and countermeasures allow for the control of pandemic risks. However, these measures cannot be ensured in conflict areas. In World War II, at the beginning of the Allied occupation of Naples, the perturbation of civil affairs almost prohibited the collection of accurate epidemiological data. The medical services were disorganized and the public health service was chaotic. Thus, no precise data existed on the virulence of infectious diseases.

More broadly, a vast historical literature describes the impact of infectious diseases on military campaigns. Epidemics not only reshape society, but also influence the outcome of wars. In various conflicts, they have won battles, altered campaigns, and modified strategies. War and disease have been linked throughout history, as soldiers, weapons, and pathogens cross paths on the battlefield. Battles are then engaged only by the remnants of armies, survivors of the epidemics of the camp. An analysis of the main conflicts before the twentieth century reveals many cases where disease has influenced the outcome of events.

The Athenian experience of the plague reminds us of this. Thucydides describes how, during the Peloponnesian wars, the disease demoralized the Athenians, undermined political power and weakened the army, then unable to achieve its military objectives. Entrenched behind their walls, the Athenians waited for the Spartan army, their strategy consisting in avoiding a frontal clash. Food abounded—Athens can count on its maritime imports.

At the same time, the Athenian fleet attacked the ports of Sparta. Pericles abandoned his rural areas to defend Athens behind its walls. His maritime strategy consisted of raids of his fleet against Sparta and support of the siege by trade ships. But when the second year of war began, the plague struck and surprised everybody, reports Thucydides. It swept Athens, killing men, women, and children. It devastated Athens and anarchy broke out, morale was affected, and Athenians cast doubt on Pericles' strategy, eventually forcing him to make peace with Sparta.

In 1344, a conflict broke out between Genoese and Mongols. In 1346, the plague devastated the Mongol army besieging the city of Kaffa, which ended up

51 Kelly Crowe – “‘We’re opening everything’: Scientists share coronavirus data in unprecedented way to contain, treat disease Social Sharing,” *CBC News*, 1 February 2020, <https://www.cbc.ca/news/health/coronavirus-2019-ncov-science-virus-genome-who-research-collaboration-1.5446948>

52 Tedros Adhanom Ghebreyesus, *Covid19—Strategy Update*, World Health Organization, Geneva 14/04/20, p. 12.

having to lift the siege. A horrendous detail—the Mongols catapulted the corpses of their plague-stricken soldiers into the city. Is the story true? It is still unsure whether Mongols wanted to spread the disease or not; however, some inhabitants of Kaffa were infected by the plague.⁵³

Bubonic plague in Jaffa, yellow fever in Haiti and typhus in Russia show how diseases influence war. During the Haitian Revolution of 1802, Napoleon sent 50,000 men to retake the French colony, but his expeditionary force shrank due to the yellow fever. A year later, he gave up and sold Louisiana to the United States.⁵⁴ Napoleon had previously stopped advancing east of the Mediterranean because of the plague in Jaffa.

Long before Napoleon, the plague politically and economically weakened the Byzantine Empire. Its capacity of resistance decreased, whereas the disease spread in the Mediterranean world. The weakness of the Byzantine army, its powerlessness in the face of the foreign attacks, was due to its inability to recruit and train new soldiers, because of the illnesses and deaths. In fact, before 542, Justinian's generals had reconquered a large part of the Western Roman Empire from the Goths, the Vandals, etc.

But after 542, the emperor had difficulty recruiting and paying troops. The territories submitted by his generals revolted. The plague reached Rome in 543, and probably Britain in 544. This "Justinian" plague did not die out until 750, when a new order emerged. A new powerful religion, Islam, was born, and its followers controlled a territory that included the former empire of Justinian and the Arabian Peninsula. Meanwhile, much of Western Europe came under French control. Was the plague responsible for this? If so, history is written not only by men but also by microbes. The decline in population impacted the army and defenses of Byzantium, while the imperial administration and economy faltered.⁵⁵

Rome did not escape the ravages of epidemics either. The moral decline, corruption, and divisions had certainly weakened a Roman empire vulnerable to foreign invasion, but significant climate changes and diseases also facilitated its fall. In 161 AD, the Roman general Lucius V Rus defeated the Parthians (1 originating from modern-day Iran) after 5 years of battles. But the Roman army brought back a terrible germ ("Antonine plague" according to the Roman dynasty of the Antonines) which raged for 15 years in Rome and killed about 5 million people, including Lucius Verus.

Through trade routes, the plague spread from Persia to Spain and from Britain to Egypt. At the height of the epidemic, it caused up to 2,000 deaths per day,

53 William J. Bernstein, *A Splendid Exchange: How Trade Shaped the World*, Atlantic Monthly Press, New York, 2008, pp. 140-141.

54 Elizabeth Kolbert, "Pandemics and the Shape of Human History," *New Yorker*, March 30, 2020.

55 Colin Barras, "The Year of Darkness," *New Scientist*, vol. 221, 2014, pp. 34-38.

according to Roman sources. The plague disrupted businesses and enterprises, wiped out cities and towns, decimated 10% to 20% of the population and a staggering 90% of Roman forces, thereby hastening the decline of the empire.⁵⁶

In American history, the disease prevented the conquest of Canada in 1812; disrupted its war strategy in Mexico; paralyzed General Robert E. Lee's offensive in 1862; and influenced the outcome of World War II. Epidemic contagion also influenced the colonization of North America: smallpox and other malaria diseases depopulated the areas around the colonies, allowing settlers to move in. The disease benefited the United States in its wars against the Amerindians, but also affected them when their troops were engaged abroad.⁵⁷

A smallpox epidemic swept the Americas at the beginning of the American Revolution. In 1776, the military action and the political agitation increased the movement of populations, thus those of the microbes and the epidemic worsens. The epidemic therefore strongly affected the outcome of the war in each colony and the life of everyone in North America.⁵⁸

Throughout the ages, epidemics have decimated armies, suspended, and cancelled military actions, and ravaged the populations of states, belligerent or not.⁵⁹ In 568 AD, the ruler of Aksum of Ethiopia laid siege to Mecca with hundreds of war elephants. The invasion failed because a deadly disease—smallpox, according to accounts of the time—decimated the troops. Along the way, the army infected Arab and Egyptian ports. Later, these ports were besieged by African tribes and the epidemic spread to Nubia through the traffic and trade routes.⁶⁰

Historians believe that the U.S. military spread the “Spanish flu” pandemic. The war favored it by overcrowding military camps in the United States and trenches in Europe. The flu struck in three waves (spring 1918, fall 1918, and winter 1919); the second wave was the deadliest. “The Spanish flu passed through the United States like the pioneers; it followed their footsteps, which became railroads.”⁶¹

56 Kyle Harper, *The Fate of Rome: Climate, Disease, and the End of an Empire*, Princeton University Press, Princeton, 2017, pp. 20, 115.

57 David Petriello, *Bacteria and Bayonets: The Impact of Disease in American Military History*, Casemate, Oxford, 2016; Roger E. Thomas, Diane L. Lorenzetti, & Wendy Spragins, “Mortality and Morbidity Among Military Personnel and Civilians During the 1930s and World War II From Transmission of Hepatitis During Yellow Fever Vaccination: Systematic Review,” *American Journal of Public Health*, vol. 103, no. 3, March 2013, pp. 16-29.

58 Elizabeth A Fenn, *Pox Americana: The Great Smallpox Epidemic of 1775-82*, Hill & Wang, New York, 2002.

59 Smallman-Raynor Matthew & Cliff Andrew, *War Epidemics: An Historical Geography of Infectious Diseases in Military Conflict and Civil Strife, 1850-2000*, Oxford University Press, Oxford, 2004.

60 Kaushik Roy & Sougat Ray, “War and epidemics: A chronicle of infectious diseases,” *Journal of Marine Medical Society*, vol. 20, no. 1, January-June 2018, pp. 50-54.

61 Alfred W. Crosby, *America's Forgotten Pandemic: The Influenza of 1918*, Cambridge University

The virus traveled with the military, from camp to camp and then across the Atlantic. At the height of the military effort (September-November 1918) influenza and pneumonia struck 20% to 40% of American soldiers and sailors. This high morbidity disrupted training and operations and disabled hundreds of thousands of soldiers.

The flu broke out in a military camp in Kansas and spread eastward with American troops, killing 50 to 100 million people worldwide, including some 500,000 Americans. It killed more people in 24 months than AIDS did in 24 years.⁶² In the American campaign in Meuse-Argonne (September-November 2018) during the second wave of the Spanish flu, the epidemic diverted resources needed for combat, transportation, and services to the sick and dead.⁶³

During World War II, typhus posed major challenges. During the American army's North African campaign, there were more than 102,000 cases of typhus⁶⁴, not to mention 90 cases of dengue fever and 470,000 cases of malaria. During the Guadalcanal offensive, which had major stakes, tropical diseases handicapped two-thirds of the 1st Marine Division: it had to be withdrawn, which blocked the offensive.⁶⁵

During the fighting around Sansapor (in by-then Dutch New Guinea), bush typhus proved to be as threatening as Japanese attacks. Shortly after the first soldier showed symptoms, alerting the medical staff, 135 soldiers were already ill. In some areas, the disease was so devastating those outposts were abandoned. The disease put the 1st Infantry Regiment out of action, hampering operations and strategy.⁶⁶ Today, Covid also worries strategists: could the virus really hinder military training?

Press, Cambridge, 2003, pp. 63-64.

62 John M. Barry, *The Great Influenza: The Story of the Deadliest Pandemic in History*, Alfred W. Crosby, *America's Forgotten Pandemic: The Influenza of 1918*, 2nd ed. Cambridge University Press, Cambridge, 2003.

63 Carol R. Byerly, "The U.S. Military and the Influenza Pandemic of 1918-1919," *Public Health Reports*, vol. 125, 2010, pp. 82-91; Peter C. Wever & Leo van Bergen, "Death from 1918 pandemic influenza during the First World War: a perspective from personal and anecdotal evidence," *Influenza and Other Respiratory Viruses*, vol. 8, no. 5, 2014, pp. 538-546.

64 J. C. Snyder, "Typhus Fever in the Second World War," *California Medicine*, vol. 66-1, Jan. 1947, pp. 3-10.

65 John L. Zimmerman, *Marines in World War II: The Guadalcanal Campaign*, U.S. Marine Corps, 1949, pp. 156-164. The Battle of Guadalcanal, which lasted from August 1942 to February 1943, was the first major U.S. counteroffensive against the Japanese in the Pacific, it also marked the culmination of Japanese expansion and can rightly be considered one of the major turning points of the Pacific War. Mark Stille & Howard Gerrard, *The Naval Battles for Guadalcanal 1942: Clash for supremacy in the Pacific*, Osprey, 2013.

66 Robert K. D. Peterson, "The Real Enemy: Scrub Typhus and the Invasion of Sansapor," *American Entomologist*, vol. 55, no. 2, Summer 2009, pp. 91-94.

The risk of “securitization”

The increased role of the state in people’s lives, due to Covid-19, also widens the social divide. Governments that used to be resistant to public spending are suddenly handing out billions. This is not necessarily bad but alienating Covid-19 from national security can give a country a siege mentality, when this approach is futile in the face of a disease that defies geographic or political barriers.

Making infectious diseases a safety issue attracts attention, increases the perception of the global effects of the pandemic, helps to fund public health, establishes national practices and boosts funding for international initiatives. But it may also hinder the cooperation that public health practitioners seek.

As the virus spreads, President Trump is shifting from denial to blaming China, with U.S. officials insisting in various forums that Covid-19 be named the “Wuhan virus.” This rhetoric does not affect China’s management of the crisis, but it can undermine global cooperation. This is because health strategies do not mesh well with the theme of national security, as global health is seen as a common ‘good’ of and between states; whereas national security places the needs of the state above others.

Vaccine nationalism “is incompatible with the fight against Covid-19,” warns WHO Director-General Tedros Adhanom Ghebreyes, who calls for sharing the tools to fight Covid-19. The damage caused by Covid-19 could be drastically reduced if rich countries are committed and contribute to a solid response: they should therefore share treatments and vaccines globally. Ghebreyes insists. “For the world to recover faster, it must act together, because it is globalized: economies are intertwined. One part of the world or a few countries cannot be a safe haven and recover.”⁶⁷

Prevention (quality vaccination programs and efforts to reduce the risk of animal-human transmission), detection (reliable surveillance structures to collect and test samples), and response are the keys to controlling pandemic risk. It is impossible for these mechanisms to spread to conflict zones, as wars usually disrupt the means of communication. The Ebola pandemic in West Africa had already revealed the chronic weaknesses of the global strategy for fighting pandemics in areas with reduced public health capacity. In lawless war zones, detection capacity is lacking and response is often slow and difficult.⁶⁸

The tightening of U.S. sanctions against Iran and the polio outbreak in Syria are reminders that health interventions, while technical, can become political weapons. Blocking or suspending a health policy can make the opponent obey you,

67 Georgina Hayes, “‘Vaccine nationalism’ will not help fight the virus, says WHO chief,” *The Telegraph*, August 6, 2020.

68 Paul H. Wise & Michele Barry, “Civil War & the Global Threat of Pandemics,” *Dædalus: American Academy of Arts & Sciences*, Fall 2017, pp. 71-84.

or even submit completely. In war zones, belligerents may insist on vaccinating pro-opposition sectors. This shows how intrusive targeted health policies can be.

Making infectious diseases a security issue may move health up the political agenda, but it is not without risk. Defining a public health problem as a security issue distances responses to disease from civil society and brings them closer to the necessarily less transparent military-security model. As an indicator of a field of practice around the state, the concept of “security” usually refers to a range of issues: power, urgency, threat/defense dynamics, legitimate use of extraordinary means, and infringement of sovereignty.

Defining a health problem as a threat to security could lead to a legalistic rather than a public health approach. However, various technologies can prevent local epidemics from developing into global pandemics. They require organized and effective governance—and political will. Paradoxically, here, the rhetoric of war does not lead to the desired cooperation.

“War on a Virus”: The Role of War Discourse

The use of warlike language by various leaders against the Covid-19 pandemic—formerly against poverty, against drugs—signals a possible shift of many sectors of daily life into a security logic. Here, the representation of dangers becomes a tool of the state to maintain its legitimacy and justify its existence. The discourse on security can and must be understood as the constant reporting of danger by the state, rather than as the state’s response to a danger. This adaptation of concepts and events to security-related debates and discursive postures does not actually always prove to be a source of security.⁶⁹ This war language leads leaders to caricature threats, concentrate power and deploy armed and security forces, even if they are ill-equipped to defeat poverty, drugs, or a virus.

With his theories on war, peace and politics, Clausewitz opened a perspective, still relevant today, according to which war is a tool of state policy, “the womb in which war develops.” His *On War* is one of those great books—like religious texts or classics of political theory—in which soldiers, statesmen, and scholars find inspiration and legitimacy for what they are trying to accomplish.

But he warns, politicians should not attempt to use war to achieve irrelevant goals. As in the past, the mobilizing power of war remains indispensable, but should be handled with extra caution. War is “an act of violence to compel its

69 Barry Buzan, Ole Wæver, & Jaap Wilde, *Security: A New Framework for Analysis*, Lynne Rienner Publishers, London, 1998, p. 32; Ole Wæver, “Securitization and Desecuritization,” in Ronnie Lipschutz (ed.), *On Security*, Columbia University Press, New York, 1995, pp. 45-86. David Campbell, *Writing Security: United States Foreign Policy and the Politics of Identity*, University of Minnesota Press, Minneapolis, 1998, pp. 50-51.

adversary to respect our will. Its nature is above all violent, interactive and political.”⁷⁰ Outside this context, we no longer speak of war but of something else.

Historically, the emergence of the modern state and professional troops gave rise to bureaucratic armies with official doctrines. In the same way, a cultural understanding of war has emerged, codified in oppositions, classic in strategic and political discourse, between “war” and “peace,” which concern distinct situations. Countries at peace go to war, then war ends and peace returns.

These basic data imply, among other things, that armed conflict is defined and wars have a beginning and an end; and there are enemy, allied, and neutral states. “Rousseau explained that war is not a relationship between man and man, but between state and state. In principle, war presupposes defined adversaries, a beginning and an end.”⁷¹ This is a crucial distinction, because actions that are lawful in war are not lawful in peacetime: society has developed an acceptable code of belligerence: the laws of war. But since reality rarely conforms to these black-and-white concepts, political discourse attempts to reconcile them with a complex reality. In the end, the discourse of war distorts Covid-19’s real-life situation, endangers the soundness of the public debate, distracts leaders and public opinions, and squanders international goodwill.

“Waging war” on a virus is the deceptive analogy of mobilizing scarce resources to confront a civil peril. Such rhetoric cultivates nationalism and facilitates the abuse of political power as agents of the state gain new power. The UN Special Rapporteur on Counter-Terrorism and Human Rights, Fionnuala Ni Aolain, warns of the risk of “a parallel epidemic of authoritarian and repressive measures” in addition to the “health epidemic.”⁷²

Of the many ways to fight the pandemic, waging war on it does not seem the most appropriate. Addressing civilian problems and their possible solutions is not the military’s strong suit: in the military, the initial question is often about what to do rather than what the problem is. Thus, the distinction between “peace” and “war” leads to the distinction between combat operations and “military operations other than war.” This distinction shows that the original function of the military is combat,⁷³ which distinguishes it from the police, for example. Knowing how to conduct a war or “operations other than war” thus defines—politically, even ideologically—what the military must do.

Politicians and academics make a different use of metaphors and terms

70 Von Clausewitz, *On War*, pp. 5-7.

71 Pierre Hassner, “Guerre et paix à l’âge de la mondialisation,” in Yves Michaud (ed.), *Qu’est-ce que la globalisation?* Odile Jacob, Paris, 2004, pp. 79-95 (80).

72 Selam Gebrekidan, “For Autocrats, and Others, Coronavirus Is a Chance to Grab Even More Power,” *New York Times*, March 30, 2020.

73 See for example Harry Summers, *On Strategy. A Critical Analysis of the Vietnam War*, Random House Pub, New York, 1995, p. 184.

when referring to the Covid-19 pandemic and other issues on which a violent vocabulary and rhetoric is imposed on (e.g., “war,” “cold war,” “war on poverty”). Scientists have different discourses from historians, etc. Each profession has its own prism—including the military. Each profession has its own prism—including the military, of course. The approach of political leaders and senior state officials is above all practical: it must orient action and strategies. Already subject to time-resource constraints, political discourse must act on events and shape reality. Argumentation and practical deliberation, this discourse influences how to respond to circumstances and events.

Thus, the originality of political discourses is to “provide motives for action.” They provide actors with premises (beliefs about the circumstances of the action, instrumental beliefs, values and objectives) to justify, criticize and, thus, decide on the action.⁷⁴ The “performative statement” of declaring war thus goes beyond the description, interpretation, or contestation of reality. When an individual or collective subject has the authority and the means to carry out his “act of language,” he does not describe, but creates a new reality.⁷⁵ “Waging war on a virus” is seductive, specified because many chosen political leaders feel their wars and also what they want us to remember about them. Because of the link between content, context and intent of a communication, the terms defining war are necessarily “fighting words” and when they are “adopted by the state itself, they can be transformed—via state institutional arrangements and by law—into violence.”⁷⁶

There are also marked differences between a war economy and a coronavirus economy. Historically, war has fueled autocracy, secrecy, and xenophobia. None of this mitigates the severity of a pandemic, nor does it help to build societal resilience, streamline public health structures, or stimulate the responsible citizenship that is so crucial during a pandemic.

War economies require increased mobilization of labor and accelerated production. Conversely, the Covid-19 economy demobilizes labor and stalls production. Whether “war” is invoked literally or metaphorically is less important than the material consequences of its repeated use. Especially since George W. Bush launched his “global war on terror,” it is everywhere, and seemingly unlimited: no one knows how to defeat an ideology (or a virus for that matter). Result: in the age of endless wars, “wartime is the only time we have”: this “wartime” is not an exception to normal peacetime: it is a reality, suggesting that we are living in a continuous wartime.

74 Isabela Fairclough & Norman Fairclough, *Political Discourse Analysis*, Routledge, New York, 2012, p. 95.

75 John Austin, *How to do things with Words*, Harvard University Press, Cambridge, 1992.

76 Rosa Brooks, *How Everything Became War and the Military Became Everything: Tales from the Pentagon*, Simon & Schuster Paperbacks, New York, 2016, p. 22.

Hence, the “presence of war as a permanent feature” of our institutions, given its invasion of daily life. As such, the “power of war cannot really be eradicated” by signing an agreement to end hostilities. Even after the conflict, the draft continues, since the legal state of war (legalizing the use of government war powers) “may last for several years. Thus, while hostilities have their own precise time frame, “wartime” has no “temporal boundaries of its own.”⁷⁷

Politicians and rulers design specific narratives, linking the policies they propose to the needs of citizens and to their own concerns for legitimacy. They are tempted to (and can) shape citizens’ preferences. However, if society no longer knows how to define a specific situation as “war,” its members forget which rules apply. Hence, society loses its collective ability to restrain violence. Because no democracy emerges from a state of permanent war without harm, we are experiencing the “irruption of the penal state” accompanied by a discourse tailored to legitimize the refocusing of the state’s missions on the maintenance of order and the control of populations seen as deviant and dangerous.⁷⁸

The conceptual limitation of a national strategy is that its priorities must address both the threats and the remedies, and the threats are many and the resources are few. Hence the importance of an accurate diagnosis: pandemics first condemn the elderly and the vulnerable, and debt increases. Even if they disrupt the economy, these pandemics do not create a lasting vacuum: criminal entities quickly fill it. For the virus is not the only peril in this socio-economic crisis. Transnational criminality uses it to weaken institutions and to enrich itself; this will last as long as the high profit/low risk paradigm.

Organized crime threatens economic recovery. Lockdowns financially burden small and medium-sized businesses. motivated primarily by money, criminal groups can expect to extend their control over entire sectors, offering enticing, cheap and unofficial loans, thereby solving their money laundering problems.

While the control of public tenders is intended to prevent these illicit practices, the scale of investment during this pandemic, and official pressure to support companies quickly, could precipitate these processes, thereby encouraging criminal infiltration. With their annual illegal revenues of between \$1.6tn and \$2.2tn, these groups not only make money but can also finance violence, corruption, etc., undermining legal economies, health, and public welfare, while destroying the environment.⁷⁹

77 Mary L. Dudziak, *War Time: An Idea, Its History, Its Consequences*, Oxford University Press, New York, 2012, pp. 4, 8, 36, 91.

78 Loic Wacquant, *Punir les pauvres. Le nouveau gouvernement de l'insécurité sociale*, Agone, Marseille, 2004, p. 13 and 167.

79 Channing Mavrellis, “Transnational Crime and the Developing World,” Global Financial Integrity, Washington, DC. in March 2017, p. xi.

Epidemics, inequalities, and revolutions

Like migration,⁸⁰ geography, and war, epidemics have profoundly shaped human history. Throughout history, epidemics and pandemics have been powerful agents of change. As human tragedies, they have inspired philosophical reflection on life and contributed to the development of modern science, the refinement of health policies and the redistribution of income and wealth. In *Plagues and Peoples*, McNeill traces the history of humankind, emphasizing how disease has shaped our trajectory as a species. Explaining how various patterns of disease circulation have affected human affairs in ancient and modern times, he argues that disease has served to break up human groups, doomed to absorption by larger ones:

[...] peoples broken by new epidemics cannot resist new encroachments, a process analogous to bacterial digestion. First, a community is broken by a combination of war (cf. mastication) and disease (cf. chemical processes in the stomach and intestines). Sometimes a local population disappears, but this is rare. More often, the first violent shocks disorient the assailed peoples.

Individuals, families or village groups, this human material is then incorporated into the fabric of the civilization. Thus mixed with the emigrants and refugees of the civilized center, these populations become indistinguishable from the rural-excentric elements of that center. The management breaks down our food, allowing molecules and atoms to integrate our metabolism: this is similar to this historical process.⁸¹

In history, the pandemic was one of the four most equal events, along with war, state collapse and revolution.⁸² The recent world-wide unrest temporarily stopped after the emergence of Covid-19. But the resumption of demonstrations in Minneapolis, London, Hong Kong, Beirut, etc. shows that the anger has not disappeared. The ranks of protesters could swell in the coming months, if millions of people affected by the economic fallout of the pandemic take to the streets.

The Covid-19 crisis was aggravated by a market-oriented type of governance. It has exposed deep problems and awakened faith in radical change that democracies must take to tackle the climate crisis. Moreover, 71% of Europeans advocate the introduction of a universal basic income. In Great Britain, the figure

80 Ian Goldin, Geoffrey Cameron, & Meera Balarajan, *Exceptional People: How Migration Shaped Our World and Will Define Our Future*, Princeton University Press, Princeton, 2011.

81 William McNeill, *Plagues and Peoples*, Anchor Books, New York, 1978, pp. 62-63.

82 Walter Scheidel, *The Great Leveler: Violence and The History Of Inequality From The Stone Age To The Twenty-First Century*, Princeton University Press, 2018.

is 68%.⁸³ These results show how high the stakes are at the end of the medical emergency, in the face of the ensuing economic crisis and its political fallout.⁸⁴

The Black Death disrupted European society in the fourteenth and fifteenth centuries, with collective bargaining and the end of feudal obligations. In Western Europe, surviving workers earned more and enjoyed a better life. In England, the plague changed the social fabric of society: increased wages and quality of life for serfs. However, the nobles struggled to maintain their extravagant lifestyle. They tried to resist, with mixed results.⁸⁵ In Eastern Europe, on the other hand, the upper class maintained a united front against the peasantry, forcing them to work long hours. Thus, the plague alone was not enough to level the living standards: local political powers played an essential role in these developments.

The popular uprisings of the late Middle Ages often had to do with the demographic, cultural, social, and economic reshaping caused by the Black Death. But this plague-uprising link is neither exclusive nor linear. In the first half of the fourteenth century, the onset of the rebellion shows a socio-economic and political unrest that predates the Black Death, which may nevertheless have fueled the popular rebellion by broadening the horizons of the peasants and creating a sense of injustice. The plague may also have weakened the social status quo and undermined the belief that preserving the *status quo* was essential to the safety of all, thereby increasing the appeal of the revolutionary social message.

After the Black Death, change was inevitable, but even in the worst-case scenario, the current pandemic will be far less deadly, and therefore less disruptive, than the great plagues of the past. In the future, globalization, population aging and migration will contribute to inequalities by diverting public services from redistributive policies. In addition, new technologies and widespread automation will widen the gap between high and low skilled workers.

In the short term, the disparities are likely to widen. A gap has opened up between white-collar workers—working from home and in less-threatened jobs—

83 Timothy Garton Ash & Antonia Zimmermann, In *Crisis, Europeans Support Radical Positions: Climate Change and Social Welfare issues most Salient*, Opinions, Moods and Preferences of European Citizens, 6 May 2020, <https://eupinions.eu/de/text/in-crisis-europeans-support-radical-positions>

84 Interestingly, hardly surprisingly, a survey conducted by the European Commission, published on November 25, 2011, found that Europeans consider the financial situation rather than “terrorism as the greatest threat to European security.” It is essential then to understand what is (or should be) meant by security. The survey found that 34% of Europeans rank the financial situation as the greatest threat to European security, just ahead of terrorism (33%). Other security issues mentioned were organized crime (21%), poverty (16%) and illegal immigration (16%). “EU survey: financial crisis more scary than terrorism,” *EUOBSERVER*, 25 October 2011, <http://euobserver.com/tickers/114404> “Survey reveals citizens’ concerns about EU security-threat response,” *New Europe*, 25 October 2011, <http://www.neurope.eu/article/survey-reveals-citizens-concerns-about-eu-security-threat-response>

85 John Hatcher, “England in the Aftermath of the Black Death,” *Past and Present*, vol. 144, no. 1, 1994, pp. 3-35. Lawrence Raymond Poos, *A rural society after the Black Death: Essex 1350-1525*, Cambridge University Press, New York, 1991.

and those on welfare programs, or other precarious jobs. African Americans suffer the worst morbidity and mortality rates. Some students struggle to participate in online courses because they lack the necessary resources. Such inequities are long-standing but are now hitting harder than usual.⁸⁶

Thus, diseases have caused shocks in Europe, such as the reformation of Martin Luther and the European expansion in the New World. For example, at the beginning of the 16th century, because of demic epi, Hernando Cortez (who did not have 600 soldiers) conquered an Aztec empire with millions of inhabitants. Less than 50 years later, the population of central Mexico has decreased by 90%. This demographic collapse impacts the religion, defense, and culture of Mexico, allowing the European conquest of the region.⁸⁷

Epidemics thus impact politics and revolutions, entrench discrimination and strike the societies where they spread, affecting personal relationships, the work of artists and intellectuals⁸⁸ and the human and natural environment. Above all, they impact history by forcing human beings to return to the big questions, such as man's relationship to God. The bubonic plague killed half of the inhabitants of entire continents and thus had a major impact on the advent of the industrial revolution, on slavery and serfdom. As Ebola and Covid-19 still show, epidemics have a major impact on social and political stability.

Return of civil unrest: a question of when, not if

Pandemics disregard borders, and together can weaken societies, political systems, economies, and armies. Humanity is focused on the challenges of the day, more than on the distant implications of the coronavirus crisis, but great changes are coming. Major crises have unforeseen but profound consequences. How will the Covid-19 pandemic affect the risk of violent conflict and hopes for world peace? There is no easy answer to this question as the crisis is constantly evolving and mutating.

That its impact has varied across different regions and conflict zones further complicates the picture. Moreover, the relevant criteria for assessing the risk of Covid-19 provoking power confrontation differ from the factors that aggravate unrest in vulnerable states. This uncertainty complicates current and future attempts to control violent conflict.

86 Melissa De Witte, "Past pandemics redistributed income between the rich and poor, according to Stanford historian," *Stanford New*, April 30, 2020.

87 David Petriello, *Bacteria and Bayonets: The Impact of Disease in American Military History*, Casemate, Oxford & Philadelphia, 2015, pp. 35-41; William H. McNeill, *Plagues and Peoples*, Anchor Books, New York, 1976, pp. 1-3 and 162-165.

88 Jonathan Jones, "Brush with the Black Death: how artists painted through the plague," *The Guardian*, Feb. 15, 2012; Hisham Matar, "Hisham Matar on how the Black Death changed art forever," *The Guardian*, June 6, 2020.

Developed and developing countries are combining public health, fiscal, and monetary policy actions to at least slow Covid-19, protect lives and limit the multiple effects of containment. Even less than public safety and health, the geopolitical implications of the crisis will dominate in the long run. For perturbed economies, the political, commercial, and macroeconomic implications of Covid-19 will be profound. The pace and extent of the virus' spread will determine which industries are most at risk. The divergent responses of governments and major commodity producers will also disrupt supply chains.

While crises have always accelerated the course of history, this one is not likely to disrupt global security. Rather, it will intensify existing trends. The geopolitical consequences of Covid-19 could disrupt traditional alliances and push states toward populism in a growing nationalist and protectionist climate. Most countries have gone into lockdown, banning travel, controlling exports, hiding data, and disdaining multilateral entities such as the WTO and UN.

Despite the worrying consequences of less global cooperation, private countries will put their internal problems ahead of global ones. Under pressure, rich countries will be tempted to close their borders, worsening the plight of migrants, which the UN says has risen from 150 million worldwide in 2000 to 272 million in 2019.⁸⁹ Restrictions on travel and movement do not prevent migration; closing land, sea and air borders increases the use of cross-border smugglers. Similarly, victims of human trafficking are more vulnerable to Covid-19: a lack of basic services will worsen their plight.⁹⁰

Efforts to counter the COVID-19 pandemic have resulted in an unprecedented retraction of the movement of people, both across borders and within countries. Some leaders have adopted hostile attitudes toward migrants, whom they perceive as a risk of contagion. While these measures may reduce migration and smuggling, they can increase the profits of smugglers and the vulnerability of migrants, militarize borders and limit safe routes. As the political atmosphere becomes hostile to migration, the risks of the route and the prices of remittances are likely to increase.

This can deter careful operators and attract organized crime, which is more likely to exploit migrants for profit. To avoid the emergence of a post-pandemic landscape of a worse migrant crisis and more lucrative smuggling by organized crime, it is crucial to monitor and mitigate the impact of Covid-19 on migrants and refugees during the pandemic. For example, in the mid-19th century and in

89 Department of Economic and Social Affairs, "The number of international migrants reaches 272 million, continuing an upward trend in all world regions, says UN," UN, 17 September 2019. <https://www.un.org/development/desa/en/news/population/international-migrant-stock-2019.html>

90 Jean-Luc Lemahieu & Angela Me, "How Covid-19 Restrictions and The Economic Consequences Are Likely To Impact Migrant Smuggling And Cross-Border Trafficking In Persons To Europe And North America," United Nations Office on Drugs and Crime, Vienna, 14 May 2020.

Tunisia, “smuggling, quarantine, and cholera worked together.”⁹¹

The current pandemic has left its mark on everyone: isolation, uncertainty, anger, anxiety; this, coupled with the economic shock, is causing psychological distress. The full political and social impact of the pandemic has yet to be felt. Even if this impact is not yet fully included in the current estimates, Covid-19 will cause vast suffering and often unbearable burdens for states. Initially economic, its effects will undoubtedly worsen food insecurity in the world.

Its rapid spread has had a staggering domino effect on the global economy, nothing indicates an improvement in the short-term. The pandemic has severely impacted the Asian garment industry and millions of people may lose their resources. Measures to contain Covid-19 have exacerbated the health problems affecting major African economies. Fears about Covid-19 continue to affect the global commodities market, including an already fragile oil market. The pandemic is enabling new illegal transactions. Those who have lost their resources or are fleeing conflict, violence and danger are defenseless against smugglers and traffickers.

Measures to curb the spread of Covid-19 create opportunities for criminal networks. Reduced social and public services leave the forgotten without support. Organized crime has quickly learned to manipulate and take advantage of these restrictions, as the Covid-19 virus presents global society with unprecedented challenges:

The first factor is the way organized crime uses political and social crises caused by the virus to strengthen its legitimacy and its hold on populations and governments. This cynical opportunism in times of crisis is nothing new—mafia groups have long used humanitarian agencies to influence people and governments. The Yakuza were the first to respond to earthquakes and tsunamis in Japan; the Jalisco bus distributed aid to hurricane victims in western Mexico last year; similarly, al-Shabaab provides food aid and supplies during the cyclical droughts in Somalia.⁹²

Travel restrictions due to the coronavirus are disrupting business supply chains. Farmers are short of migrant workers (in countries such as Spain, Canada, etc.); reduced air traffic is affecting the flow of goods and aid; and expats work from home, putting a damper on ongoing projects. Income losses due to anti-COVID

91 “Likewise, regulations enjoining compliance with quarantine were promulgated. As the Sanitary Board expanded its operations to combat the scourge of cholera morbus and other epidemics, the ever-stricter enforcement of quarantine may have encouraged smuggling; thus smuggling, quarantine, and cholera work together.” Julia A. Clancy-Smith, *Mediterraneans: North Africa and Europe in an Age of Migration, C. 1800-1900*, University of California Press, Los Angeles, 2012, p. 180.

92 Mark Shaw & Tuesday Reitano, “COVID-19: Strengthen civil society in a time of unprecedented change and undermine criminal governance,” Global Initiative against Transnational Organized Crime, Geneva, 31 March 2020.

measures and the overall recession will increase food insecurity.⁹³ The environment is increasing the cost of international trade—even of basic commodities. For example, the pandemic has had a major impact on European economies. The European Commission estimates that the Eurozone's GDP will fall by 8.7% in 2020.⁹⁴

The fragility of states is long-standing, but the strain of the pandemic will make some even weaker or defaulting, adding to their debt burden. The world's public and private debt is already massive, but Covid-19 will require huge public expenditures to fund health care and support the unemployed, making it even worse. As the economic perils of Covid-19 pile up, unrest could spread to poor countries, threatening their domestic stability. One likely scenario is “increased protests; the next decade will see unprecedented unrest. The majority of these 37 “high-risk” states are in Africa and Latin America.”⁹⁵

The developing world will indeed face enormous demands that it may not be able to meet. The Covid-19 pandemic could push 500 million people into poverty if the global community does not intervene. The IMF and World Bank estimate that failure to address the pandemic could push half the world's population (7.8 billion people) into poverty.⁹⁶ It remains to be seen whether developed countries will provide the necessary assistance, given their national requirements.

This assistance is questionable, as *ActionAid* suggests that only one-third of G7 official aid in 2003 is “real.” The rest is “fanciful” aid for various purposes, but not poverty. Only 10 cents of every dollar of U.S. aid is “real” and almost 1/3 of aid from the UK—seen as the most serious in this area—is considered phantom. A large portion of this “aid” is used to hire private consulting firms working on privatization programs, *ActionAid* reveals.⁹⁷

The Athenian experience with the plague should convince us of the power of the invisible. In the Peloponnesian wars, Thucydides describes how the plague panicked the Athenians, weakened the government and the army, and left them unable to achieve their key military objectives. The worst thing about the pandemic-Covid 19—was the general unpreparedness of governments, with emergency public health measures proving modest compared to those for national security.

93 Food and Agriculture Organization (FAO) “Crop Prospects and Food Situation,” *Quarterly Global Report*, no. 2, of the United Nations, Rome, Italy, July 2020.

94 European Commission, “Summer 2020 Economic Forecast: An even deeper recession with wider divergences,” Press release, Brussels, 7 July 2020. https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1269

95 Miha Hribernik & Tim Campbell, “Emerging markets face acute instability as pandemic fuels unrest,” Verisk Maplecroft, July 16, 2020.

96 Larry Elliott, “Coronavirus could push half a billion people into poverty, Oxfam warns,” *The Guardian*, April 9, 2020.

97 Firoze Manji, “Make looting history,” *Pambazuka News*, no. 214, July 2005; *Pambazuka News* 197: Special Report on “Debt and Africa,” *Pambazuka News*, Special Report, no. 197, 10 March 2005.

The military conception of the global challenges has led the leaders to neglect such vital issues as public health and revealed the powerlessness of the leaders of many countries, heavily equipped with sophisticated weapons, drones, missiles, etc. (United States, France, Great Britain, etc.) in the face of microscopic perils. As in previous crises, Covid-19 revealed the blind spots in state preparations for pandemics. Covid-19 flaws are all the stranger because biosecurity and biodefense were at the heart of recent Western plans to deal with the peril of biological weapons.

PART II - THE BIOTERRORISM PERSPECTIVE

Epidemiologists Malik Peiris and Yi Guan write that “nature remains the worst bio-terrorist threat of all.”⁹⁸ Yet despite their potential consequences, pandemics and biological weapons have not received the attention they deserve. Although “biowarfare” and “bioterrorism” are often used interchangeably, bioterrorism specifically refers to the actions of a subnational entity, rather than a state. With this uncomfortable reality in mind, this article aims to highlight the importance of a new paradigm, one in which non-military security issues become paramount. However, designing effective policies requires knowing the history of biological weapons and their uses. This second part now shows how technological advances change our approach to the biological weapon, for combating it also helps containing pandemics.

Technoscientific progress and terrorism

Globalization involves interdependent trends that impacts security challenges and issues:

- 1) Growth (number and capacity) of actors (state and non-state) impacting events.
- 2) Increased border porosity.
- 3) Progress of democratic governance and market economies, which have failed to become the only forms of government or economic organization.
- 4) Growth in regional and global integration processes.
- 5) “Annihilation of space by time,” a concept that suggests a 21st century marked by anarchy, failed states, and prolonged irregular conflicts.

⁹⁸ Mark Honigsbaum, *The Pandemic Century: One Hundred Years of Panic, Hysteria, and Hubris*, W. W. Norton Company, 2019.

The combination of such political, technological, geopolitical, demographic, and environmental changes leads to conflict, especially intra-state conflict, promotes state disintegration, stimulates extremism, and facilitates the recruitment of non-state actors. The growing urbanization and demographics of developing countries and the competition for resources are causing these changes, which are sources of conflict. Added to this is the spread of civilian and military technology, which is increasingly available. In addition, the persistence and emergence of “safe havens” will create a security environment conducive to extremism, terrorist, criminal and insurgent groups, and protracted identity-based conflicts.⁹⁹

Technological and scientific advances have major upheavals in sectors such as trade, finance, social relations, and the military, to name but a few. The transformation is accelerating, seemingly without any available brakes. The evolution of the techno-scientific environment profoundly affects the international framework. New technologies are changing the production and distribution of wealth, leading to rapid and potentially dangerous social, economic and political changes. Global economic competition is intensifying, driven by the emergence of multinational groups with no national commitments and with a powerful influence on world trade.

The same tools that empower people are used by terrorists to increase their power to harm and their global reach.¹⁰⁰ technologies that enhance the ability to cooperate, collaborate and communicate also limit military and security effectiveness.¹⁰¹ Technology offers the enemy unprecedented access to the tools of globalization: the Internet, cellular telephones, money transfers, ease of movement, international trade, etc.

More broadly, technological and scientific progress contributes to the proliferation of major international players, both in number and in capacity:

- 1) expanded role played by non-state actors on the international, regional, and national scenes, including in the security field.
- 2) a numerical increase of actors, which are able, thanks to techno-scientific progress, spread their projection capacities and, thereby, their power.

This increases the likelihood that a growing group of actors will challenge states.

99 Tewfik Hamel, “*La Stratégie d’engagement des Etats-Unis dans le Sud à l’ère de la mondialisation*,” PhD thesis in Military History, under the direction of Jacques ABEN, Centre de Recherches Interdisciplinaires en Sciences humaines et Sociales de Montpellier, Université Paul-Valéry, Montpellier, 2020.

100 Terror is a means of controlling populations through fear. Gough uses the expression “the machine of terror.” Hugh Gough, *The Terror in the French Revolution*, 2nd Ed., Macmillan, London, 2010, pp. 29-30.

101 Paul T. Mitchell, *Network Centric Warfare and Coalition Operations*, Routledge, New York, 2009, pp. 2-3.

International terrorism alone is one of the most virulent examples of these changes in the privatization of violence. “The ever-increasing ability of individuals and groups to collect, analyze, disseminate, and act quickly on information signals the elimination of traditional barriers between national and international affairs and the decline of the nation state.” Thus, the coming decades will see the expansion of non-state actors in international crises, “exerting a disturbing influence on all sectors of society without reference to national borders.”¹⁰² Weaver warns of the expansion of “an informal network of small, loosely organized underground cells with worldwide support centers: in the United States, around the Persian Gulf, in Germany, Switzerland, Scandinavia, Sudan, Pakistan and Afghanistan.” The nature of terrorism has changed: “e-mail and faxes are driving the jihad.”¹⁰³

Undeniably, the techno-scientific environment is shaping peoples and societies faster and more profoundly than what even informed observers could imagine. Technology is the only major modern process that has reduced the power of demography, providing less populous countries with advanced weapons systems that guarantee better control of migration flows. This process also empowers individuals and small groups.

The social implications of the techno-scientific revolution are omnipresent and far-reaching; first of all, on our political systems and values, forcing each nation to reconsider its vulnerabilities and its sovereignty. The main driving force behind the global connection between individuals and societies at all levels is information technology, which is proliferating at an exponential rate. From almost zero in 1990, the number of users worldwide has soared in the last 20 years, with on average more than 40% annual increase. Today, more than 1.6 billion people¹⁰⁴ on all continents are connected, stimulating globalization, productivity, and information sharing.

Here, the challenge is not to limit who can come online, but to:

- 1) understand the economic, legal, political, and security paradigms of geo-cyber, and
- 2) learn to manage them in the age of synthetic biology and nanoscience. The most pressing question is not how technology and science will change, but how this process of change and evolution will itself be managed.

The end of the twentieth century saw the gradual breakdown of the Weberian monopoly of organized violence. Techno-scientific advances have allowed groups of young people, angry, defiant and frustrated, to undermine the stability

102 Henry H. Shelton, “A Word from the Chairman,” *JFQ*, Summer 1999, pp. 4-5.

103 Mary Anne Weaver, “Blowback,” *The Atlantic*, May 1996.

104 Ian Goldin, “Globalization and risks for business: Implications of an increasingly interconnected world,” *Lloyd’s 360° Risk Insight*, James Martin 21st Century School, University of Oxford, London, 2010, p. 12.

of the societies in which they live. Activities facilitated by porous borders, access to weapons and technologies and the diffusion of ideas and images that promote envy, anger, hatred, greed, etc. In an interdependent world, a few malicious individuals with a modest budget can paralyze the economy in specific locations. If some actors are willing to engage in such actions, a few fanatics with a “dirty bomb” or a bio-weapon can cause death on an unimaginable scale.¹⁰⁵

So let us look at these non-state actors who can transform the international system and destroy the economy of a modern nation, undermining the authority and legitimacy of the state or corrupting social cohesion. They must be treated, not as mere outlaws, but as a new threat, as seriously as inter-states wars of the past.¹⁰⁶ They can disrupt the system and paralyze the rules in use, at least on a national scale; perhaps on a global scale.

The *vertical* shock that they generate generates *horizontal* waves, crossing national and sectoral borders, to the point of disrupting almost all the rules. Globalization transmits shock waves ever faster and stronger, and the war of powers, which has become suicidal, can no longer provide them with a strategic organizing principle and resource acquisition. Interdependence means that the failure of a single network can cause the failure of others: transport, water, electricity, etc. The Covid-19 pandemic revealed this.

Bioterrorism

The emergence of new diseases; the “tinkering” with pathogens and their deliberate addition to the arsenals of the powers that be have changed our perception of infectious diseases. After nearly eight decades of success with vaccines and antibiotics against infectious diseases, the pathogen is back in the picture. Infectious diseases are once again the leading cause of human mortality worldwide. Worse: deliberately spreading disease has gone from possibility to fact.

Often, these diseases circulate through human ignorance—war, travel, trade, social or dietary changes; various natural epidemics show their destructive potential on the economy and social life. In addition, of the risk now exists of a deliberate spread of a disease through bioterrorism.¹⁰⁷ For example, in recent decades, the United States alone has experienced biological attacks or incidents targeting civilians, such as anthrax (*Anthrax Bacillus*, 2001).

Although the threat of bioterrorism is a major challenge in the 21st century,

105 Fred Charles Ikle, *Annihilation from Within*, Columbia University press, New York (USA), 2006, p. 84.

106 “International affairs will increasingly be determined by large and powerful organizations rather than by governments.” Moreover, “terrorist tactics will become increasingly sophisticated and designed to achieve mass casualties,” predicted the NIC in 2000, *Global Trends 2015*, *op. cit.*, p. 50.

107 Alfred Jay Bollet, *Plagues and Poxes: The Impact of Human History on Epidemic Disease*, Demos, NY, 2004.

the potential of infectious agents as weapons has been known for centuries: the history of warfare is replete with attempts to trigger disease. Thanks to medical advances in recent decades, disease was no longer a major national security concern; but that is changing. In 2016, at the Future of War conference, George Poste spoke of the risk of emerging infectious diseases; a bleak future where disease would once again play a central role in world affairs.

For example, the H5N1 virus (mortality rate: 60%) has been proven to have been transmitted by infected birds, before mutating to human-to-human transmission. It is estimated that H5N1 has caused more than 150 million deaths worldwide. Mr. Poste lists as current biological threats: pandemic influenza; anti-biotic-resistant infections; bioterrorism; and new technologies altering the current disease landscape.¹⁰⁸

Of great concern is the potential for bioterrorism to cause illness, death, and panic, suffocating available resources. Bioterrorism was identified as a concern by political and military leaders in the late 1980s, after the fall of the Soviet block and the Gulf War. There was concern that state biological weapons programs were losing control, providing weapons and scientific expertise to terrorists.

Bioterrorism is the intentional use, or threat of use for terrorist purposes, of microorganisms (bacteria, viruses, fungi, parasites, or toxins) to induce disease, death, or any biological disorder in humans, animals, plants, or any living organism, to influence a government or to intimidate and coerce a population. Bioterrorism consists of deliberate acts such as the introduction of pests that destroy food crops; the spread of a virulent disease between animal husbandry facilities; and the poisoning of water, food, and blood supplies. The act of bioterrorism ranges from a simple hoax to the actual use of biological weapons.

In practice, biological terrorist attacks are difficult. Their success is unlikely, given the technical difficulties and constraints. The ability to manipulate pathogens, toxins, and chemicals requires sophisticated scientific knowledge of epidemiology, biology, chemistry, and advanced delivery systems. Making a biological weapon is an arduous and complex process, depending on the pathogen to be “weaponized.” But of course, technological, scientific and transportation advances limit these difficulties.

In a world of rapid technical and scientific progress,¹⁰⁹ bioterrorism has its advantages and limits. The highly effective biological weapon must always cause death or disease; it must be highly contagious with a short incubation period, in-

108 <https://www.youtube.com/watch?v=QJ1lhaVSR-U&feature=youtu.be&list=PLNoVefpaPtVOjn28piSMBnMv6D6ldaV43>

109 Secretariat of Defense and National Security (SGDSN), *Future Shocks: Prospective Study to 2030: Impacts of Technological Transformations and Disruptions on our Strategic and Security Environment*, Paris, May 2017, <http://www.sgdsn.gouv.fr/uploads/2017/04/sgdsn-document-prospectives-v5-bd.pdf>

fectious at low doses and stable during its dissemination. The weapon must be storable and mass-produced. The disease must be undetectable as a bioterrorist agent; the target population must have little or no immunity or access to treatment; the terrorist must be able to protect or treat his own forces and/or supporters against the infectious agents or toxins.¹¹⁰

Too small for the human eye, impossible to smell or taste, biological agents are attractive to potential terrorists: less costly than nuclear; difficult to detect dissemination, even over large areas; those involved can protect themselves and flee before the effects emerge: panic, especially in health care facilities and the economy. Detecting and diagnosing the diseases they cause requires sophisticated techniques and equipment. All of these agents are natural and easily retrievable. In ancient times, arrows were poisoned with venom. In 2016, the WHO-animal listed 118 animal diseases and infections that could be used as biological weapons.¹¹¹

Of all recorded diseases affecting humans, over 60% are zoonotic; 75% of emerging diseases are also zoonotic. Bioterrorism uses all zoonotic infectious agents, circulating easily from animals to humans and vice versa. Bioterrorism can thus affect the lives of millions of people, without alarm, starting from biological agents more powerful than conventional and chemical weapons. Advances in biochemistry and biotechnology simplify the development and production of these weapons, while genetics and neuroscience may hold even greater potential.¹¹² Easy to produce, widely available agents, and technical know-how have led to a new spread of bioweapons and an increased desire for them.¹¹³

Biowarfare agents are among the most extreme forms of random violence. Even with limited casualties, the impact of a bioterrorist attack is high. Bioterrorism and biowarfare employ live agents or toxins to be disseminated-delivered by infected individuals, insects, aerosols, and by contamination of water and food-stuffs. Thus, biological threats and risks are mostly low probability, but high impact in nature.

Thus, governments need to incorporate a possible increase in extremism into their emergency crisis plans. Even though a biological attack by terrorists or a hostile nation is unlikely, it still requires public health planning. This is a major lesson from the Covid-19 crisis, which also revealed weaknesses in systems that must respond to biological emergencies.

110 Nicholas J. Beeching, David A.B. Dance, Alastair R.O. Miller, & Robert C. Spencer, "Biological warfare and bioterrorism," *Clinical Review*, vol. 324, February 2002, pp. 336-339.

111 Vladan Radosavljevic, Ines Banjari, & Goran Belojevic, *Defense Against Bioterrorism: Methods for Prevention and Control*, Springer, 2018, p. 4.

112 Malcolm Dando, *Neuroscience and the Future of Chemical-Biological Weapons*, Palgrave Macmillan, 2015.

113 Ryan, C Patrick, "Zoonoses likely to be used in bioterrorism," *Public Health Reports*, Washington, D.C., vol. 123, no. 3, 2008, pp. 276-81.

This crisis should accelerate contingency planning for biological attacks that overwhelm medical capabilities, cause illness and death, and disrupt the economy and society. For while potential pathogens are plentiful worldwide, resources for research, development and countermeasures remain scarce. Ensuring that such a master plan is focused and productive begins with prioritizing diseases and agents in the event of a public health emergency.

Classification and prioritization

How to plan for uncertainty? The crucial classification of biological agents for prioritization is a very complex process. Established in 2005 to strengthen Europe's defenses against infectious diseases, the European Centre for Disease Prevention and Control envisions the methodology for prioritizing diseases in a report addressing best practices for prioritizing infectious disease threats.

To identify, assess, and communicate current and emerging public health threats from communicable diseases, the center reviewed 17 studies and compared five communicable disease risk ranking methodologies: bibliometric index, Delphi technique, multi-criteria decision analysis, qualitative algorithms, and questionnaires. Without being able to "recommend a single definitive approach," it presents a disease prioritization tool that operates by weighting. It provides an assessment of the strengths and limitations of the available methods, with suggestions for good practice to inform decision-makers' choice of risk ranking methods.¹¹⁴

The judgment of public policymakers, planners, health and safety professionals is a key element. Based on a list drawn up on historical facts, NATO has identified 14 agents presenting "unequal dangers." In this list, four are considered to be of primary concern because of the risk of terrorism: smallpox, anthrax, plague and botulinum toxin.¹¹⁵ The agents of the bioterrorist threat are classified into three groups:

- Group A: the most dangerous microorganisms. Easily spread or transmitted by contagion, they can cause public panic and social disruption and require special public health preparation: anthrax, botulism, plague, smallpox, tularemia, viral hemorrhagic fever.
- Group B: microorganisms and toxins causing less serious illnesses, which are mediated or spread. With moderate or low morbidity-mortality rates, they

114 European Centre for Disease Prevention and Control, "Best Practices in Ranking Emerging Infectious Disease Threats: A Literature Review," Technical Report, Stockholm, February 2015, pp. 1 and 20.

115 Délégation aux affaires stratégiques, *Prospective géostratégique à l'horizon des trente prochaines années*, Délégation à l'information et à la communication de la défense, Ministère de la Défense, Paris, 2008, p. 169.

require progress in diagnosis and increased surveillance: Brucellosis, Rhine, Typhoid fever, Psittacosis, Q fever, Typhus, etc.

- Group C: Emerging diseases; genetically modified microorganisms that may belong to this last category; readily available, produced and disseminated; high potential for morbidity and mortality, major health impact: Nipah virus and hantavirus.

The *U.S. Center for Disease Control and Prevention* (CDC) has classified biological agents into three distinct groups, based on their public health impact (severity of illness and death), potential for dissemination, public perception, and ease of prevention. This classification into categories A, B and C is a complex decision-making process based on:¹¹⁶

- The agent's ability to disseminate,
- Mortality rate,
- Preparatory public health process.
- Ability to cause public panic.¹¹⁷

Biological agents		
Bacteria	Virus	Toxins
Plague	Smallpox	Botulinum toxin
Anthrax	Viral hemorrhagic fever	Ricin
Tularemia	Viral encephalitis	Marine toxins
Q fever		Venoms
Brucellosis		Lococcal staphylococcal enterotoxin B

Prioritization of diseases and pathogens requires a set of qualitative, intangible, or subjective criteria that vary among stakeholders. These criteria can also be interdependent, which complicates the evaluation. For example, the case fatality rate of a disease has both a social and an economic effect. Given the complexity of the disease classification process, it is important to ensure transparency and accountability.

116 Lisa Rotz, Ali Khan, Scott Lillibridge, Stephen M. Ostroff, & James M. Hughes, "Public health assessment of potential biological terrorism agents," *Emerging Infectious Diseases*, vol. 8, no. 2, February 2002, pp. 225-230.

117 Ellison D. Hank, *Handbook of Chemical and Biological Warfare Agents*, CRC Press, NY, 2008, pp. xxviii-xxx.

At the government level, prioritizing diseases is primarily a matter of allocating financial and human resources to safeguard human health; this is a crucial step in rationalizing public policy: achieving the maximum objectives with the minimum effort.¹¹⁸

In the broad perspective of public health, prioritizing infectious diseases is a long and complex process; leaders face multiple pressures before any public policy is implemented. For example, the “Vigipirate” emergency plans and their variations, in particular “Piratox” and “Biotox,” cannot be limited to describing the responsibilities of the various levels of actors and their interactions.

The imperative of decision-makers is not only academic, but also and above all practical: it is to precisely identify the problem, and optimally blend theory and practice, planning and action, strategy and tactics, to achieve the best results. However, the vast and complex state apparatus does not facilitate the formulation of a coherent and rational national or even sectoral policy; moreover, formulating a strategy is one thing, executing it is another.

Strategic assessment is a crucial element of a state’s ability to adapt its strategy to changing conditions. The assessment of the physical and social environment is a crucial stage in the implementation of a national strategy. In the art of governing, national security mechanisms and institutions simply issue presidential decisions. It includes:

- policy formulation,
- the development of planning strategies and guidelines,
- allocation and alignment of resources,
- tracking and monitoring implementations,
- and performance evaluation based on feedback loops.

Although biothreats have been widely discussed in recent years, policies targeting such potential dangers failed to secure public support and adequate funding.

Particularity of a biological attack

“**T**errorist attack” suggests bombs, suicide bombers or similar acts; almost no one thinks of the more sophisticated means: gases or toxic agents transmitted through contaminated food, water, and air. Citizens are aware of many forms of terrorism, but rarely consider the deadliest, ignoring the

118 Massinissa Si Mehand, Piers Millett, Farah Al-Shorbaji, Cathy Roth, Marie Paule Kieny, & Bernadette Murgue, “World Health Organization methodology to prioritize emerging infectious diseases in need of research and development,” *Emerging Infectious Diseases*, vol. 24, no. 9, September 2018.

idea of terrorists detonating a nuclear device in a metropolis, even though policy-makers and security experts always assume such an act is possible on national soil.

Under the rubric of “asymmetric,” many scenarios have been envisaged since the mid-1990s. The most worrisome of these is the heavy attack involving weapons of mass destruction (WMD). In addition to manipulating the political environment, the attacker could infiltrate irregular forces carrying chemical agents into the national territory; the strategic strikes would then come from within. Even a “dirty bomb” would cause widespread death, panic, and major disruption. Thus, a strategy that provides for a wide range of bioterrorism scenarios is needed. For many biological agents are far more deadly per unit than the worst chemical warfare agents.

The most worrisome aspect here is the prospect of a biochemical attack. Unlike chemical terrorism, biological terrorism is insidious: its agents strike populations without any visible reaction before incubation (several days or even weeks). Among the chemical, biological, radiological, and nuclear threats, bioterrorism most urgently calls for new strategic thinking on:

- the status of evaluation intelligence,
- characterization of emerging threats,
- prevention, response, deterrence,
- planning for preparedness, detection, countermeasures, recovery and mitigation, knowing that nowadays disease surveillance, and control systems rely on post-symptomatic notification.

The threat of deliberate release of biological agents is the most complex and problematic WMD threat to humanity. Having (as far as is known) political, religious, ideological, or criminal motivations, such bioterrorist acts, could be planned by groups (or single individuals), or even be state-sponsored, as part of an asymmetric strategy.

Theoretically, the bioterrorist attack can be overt or covert. But it is likely that these attacks will remain covert. Thus, the bio-terrorism warning system must be able to identify a signal early, without any claim to it. An effective surveillance system is one of proactive information and requires intercepting the health signal and assessing it early, in order to raise the alarm immediately.

There is no rule of thumb for how many people can be infected by a single patient. Meanwhile, the nature of the contagion and the complexity of the bioterrorism threats clearly compound the problem. In this case, the first victims of the intentional epidemic become weapons for the aggressor, spreading the disease at every step. Food can also undermine bioterrorist attacks. Hence, the importance of food security—first of all of the large food supply chains: air caterers, collective kitchens, etc. —and secondly, the need to ensure the safety of the food supply.

Parameters	Chemical agents	Biological agents
Beginning of the disease	Fast: minutes to hours	Delayed: days to weeks
Distribution of patients	Downwind; near release point	Widespread; possibly international
First response	Ambulance, fire, police	Doctors and nurses in the emergency room
Decontamination	Very important	Generally useless
Treatment	chemical antidotes	Vaccines and antibiotics
Isolation	No need after decontamination	Crucial for transmissible diseases

For the nuclear threat, there is the solution of strict control of all fissile materials. Although difficult, effective control is possible, and its implementation depends on the decision makers.¹¹⁹ But the effects of a major biological attack are poorly understood, especially by the public, and countermeasures may not be sufficient. To raise awareness, Interpol developed a *Bio-terrorism Incident Response Guide* in 2007, which has been frequently revised and updated, and has created an online tutorial and guides for police academies.

A bioterrorist attack requires contingency planning based on the public health infrastructure. The destructive potential of biological agents (i.e., bacteria, viruses, toxins) is not detectable until the symptoms affect a substantial part of the population. The pathogen is spread during periods of incubation, illness, and recovery, but the bioterrorism attack does not have an immediate impact; when a population is infected with a pathogen, there is an incubation period before the disease erupts. Bioterrorism aims to cause casualties, terror, economic loss, and social chaos. Its success depends on the level of disruption and panic in society, not on the number of victims: infecting a few individuals may be sufficient, if it creates the desired impact.

Biodefense, biosecurity, and bioterrorism: Cross-cutting responses

The Corona pandemic was an important practical exercise in how to deal with such crises, including precautionary measures, and has generated cumulative experience in many countries that can be used to address other risks, such as pandemic or bioterrorism. Interpol, which is “preparing for post-Covid-19 threats,” notes that the “pandemic has created critical opportunities to consider improving current capabilities and resources to enhance our preparedness and resilience to any future shocks.”¹²⁰

119 Graham T. Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* Times, Henry Holt and Company, New York, 2004.

120 Interpol, *op. cit.*, p. 19.

The effects of a biological attack would be devastating, but this probability is, according to some experts, low. Other security analysts believe the risk is real, and negligence has dire consequences if the unthinkable happens. The risks: spontaneous outbreak of a known endemic disease; spontaneous outbreak of a new or re-emerging disease; laboratory accident; intentional attack by biological agent.

That said, effective preparation for bioterrorism would certainly make it possible to better face a crisis of natural origin:¹²¹ the risk is worse when there is a will to harm, the hostile intention of a clearly defined entity. The risk is worse when there is a will to harm, the hostile intention of a clearly defined entity. However, planning for a pandemic and bioterrorism is indissociable, and there is an obvious continuity between measures to counter bioterrorism and a pandemic.¹²²

Any outbreak should be evaluated as a potential bioterrorist attack. Rare illnesses with unusual rates should be a warning. In national security, biodefense refers to a nation's collective efforts to improve its defenses against biological attacks. Protecting citizens and military personnel from the effects of biothreats is not the only response to biological weapons from state and non-state actors.

Initially, biodefense programs forced intelligence to know the biological arsenal of a potential aggressor; now, these programs and agencies encompass: surveillance and tracking of global diseases; tracing of countermeasures to outbreak events. They are working to increase data collection and analysis.

Beyond that, programs to mitigate the effects of bioweapons by developing vaccines, therapies, and detection methods that strengthen the defense posture. These efforts are complemented by biosecurity programs: policies and measures to protect food and agricultural resources from—accidental contamination and deliberate bioterrorism attacks.

The public transportation systems of a dense urban area could come under biological attack, leading to social and political chaos. Exposure to any severe stressor—human or natural—can lead to disorder, population displacement, and collapse of social systems. Biological attacks—weapons of mass destruction, disorganization, and disruption—can cause psychological and social shock, even when the agents cause low physical mortality.

One of the first effects is intense social and psychological distress. There are several reasons for this: invisibility of biological agents, uncertainty about their dispersal and dangerousness, possible transmission through human contact, etc. Few of these agents produce the desired effect, so biological agents—cheap and

121 David A. Ashford, Robyn M. Kaiser, Michael E. Bales, Kathleen Shutt, Ameer Patrawalla, & Andre McShan, "Planning Against Biological Terrorism: Lessons From Outbreak Investigations," *Emerging Infectious Diseases*, vol. 9, no. 5, May 2003, pp. 515-519.

122 I.W. Fong & Kenneth Alibek, *Bioterrorism and Infectious Agents: A New Dilemma for the 21st Century*, Springer Verlag, New York, 2009.

rather easy to obtain and distribute—produce a terrorist effect, spreading chaos and terror among populations.¹²³ Such a weapons system consists of four elements.

- The payload, the biological agent itself.
- The ammunition protecting and transporting this load to maintain its strength during delivery.
- The delivery system: missile, vehicle (plane, boat, vehicle), shell, human being, food.
- The dispersal system spreading the charge over the target. Potential dispersants are aerosols, explosives, and food or water contamination. Aerosols are the most effective means of generalized dispersal.

Today, bioterrorism is an obvious crime, but “back then [in 2001] it was not at all. Bioterrorism was not criminalized in most countries.” More than a criminal tool, the biological weapon was seen as a violation of an arms control treaty: a political issue, therefore. “Hence a huge problem when it comes to non-state actors: terrorists don’t care about arms control agreements.”¹²⁴

At the international level, biological and toxin weapons are prohibited by the *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*, which entered into force in 1975 and has been hailed as a cornerstone of the international architecture for WMD control. But biological weapons issues are the least regulated of the WMD and it is unlikely that terrorist groups will feel bound by international agreements.

The scope of bioterrorism is broad: no single department or agency can respond to emerging atypical threats, terrorism, WMD proliferation, organized crime and other transnational perils. These threats require coordinated policy, planning, and execution by national security agencies, but additionally, cooperation with local governments. No single military, police or security agency can provide security against bioterrorism. Biodefense touches on many aspects of society and is a matter of national and homeland security, public health and economic security. Its success requires: awareness, surveillance, and preparation.

Here, the responses are cross-cutting as shown in Covid-19. For the government, this creates problems of ownership and resource allocation. Bioterrorism brings together three elements (terrorist, biological agent, living target) from different professions and expertise. Hence, the need to find ways of cooperating

123 See, e.g., Alexander Freund, “Ricin - An Easy-to-Obtain Bio-Weapon From the Internet,” *Deutsche Welle*, 15 June 2018, <https://www.dw.com/en/ricin-an-easy-to-obtain-bio-weapon-from-the-internet/a-44242451>

124 Gigi Kwik Gronvall, *Preparing for Bioterrorism: The Alfred P. Sloan Foundation’s Leadership in Biosecurity*, Center for Biosecurity of UPMC, Baltimore & Maryland, 2012, pp. 65-66.

to achieve their objectives. Thus, veterinary expertise and the exchange of veterinary-medical skills are beneficial to the citizen and to the government.¹²⁵

Hence, the call for coordinated efforts to detect biological agents and infectious diseases: hospital preparedness, intelligence gathering and planning. Whether bio-measures or pandemics, preparedness plans must include business and public health officials and leaders—civil society. In 2003, the “Biotox-Piratox” laboratory network was created in France, a specialized component of the antiterrorist plan dedicated to the analysis of folds, packages and substances that may contain dangerous biological or chemical agents. Since 2011, the network has extended its missions to all suspicious substances in the environment, drinking water and/or the food chain, due to deliberate and intended harm or negligence.

The network must act quickly, in effective collaboration with the health services, the police and the army, to avert the threat to the public. In the event of exposure to a biological agent, victims are cared for by the ORSAN-REB system (formerly ORSAN-BIO).¹²⁶ These measures, which are designed to cover risks with civil security plans, are complemented by the control of threats, particularly terrorist threats, through VIGIPIRATE and other government plans. The Army Health Service and the General Delegation for Armaments are mobilized, along with the Pasteur Institute, the CEA, and some laboratories of the CNRS and Inserm.

On November 19, 2019, Patrice Binder, Director of Inserm said, “[l]ooking at the archives, since its inception in 2003, the network has processed 1,300 alerts. In 2003, 207 separate incidents were recorded, but since 2010, this number has dropped to 150 per year. Thanks in part to a better understanding of what we look at and the organization of the network, the number of analyses of suspected bio-terrorism agents has dropped from 77.8% to less than 2% in 2011.”¹²⁷

125 Prime Minister, “*Interministerial Instruction: Relative to the structure and operation of the national network of ‘BIOTOX-PIRATO’ laboratories*,” No. 278/SGDSN/PSE/DTS, Paris, May 4, 2018. http://circulaires.legifrance.gouv.fr/pdf/2018/06/cir_43600.pdf

126 The national planning doctrine has evolved in the event of an “exceptional health situation” (EHS), which refers to “the occurrence of an emerging, unusual or unknown event that goes beyond the framework of routine alert management due to its scale, severity or media character, and which may lead to a crisis.” Initially based on specific plans, it has evolved towards the definition of global response strategies, adapted to the various levels of territorial intervention. This planning framework is based on the organization of the health system response (ORSAN) to HSE. The ORSAN plan is a care organization device, thought up by the Regional Health Agencies in 2014. It was first partially applied during the summer of 2014 when Ebola entered the French territory, then in full in February 2015 during the seasonal flu epidemic. The ORSAN plan was reactivated on November 13, 2015, following the terrorist attacks in Paris, then on July 14, 2016, during the Nice attacks. This plan includes 5 components used to organize care when one of the 5 situations likely to impact the health system occurs.

127 “French bio-terrorism network of labs,” *Health In Europe*, November 19, 2013, <https://health-care-in-europe.com/en/home/index.html?src=scrollto>

What is the probability of a biological attack? Psychosis or real danger

Human pathogens and toxins pose a real risk to human health and safety from potential release, either accidentally (biosafety) or intentionally (biosecurity). What is the likelihood that terrorists will use biological weapons? With so many unknowns, it is difficult to assess these risks and threats. But advances in technology and science are significantly expanding the range, scope, severity and probability of biothreats. For Interpol, the threat is “real,”¹²⁸ “given the potential benefit that could be derived from biological weapons, it is surprising that there are so few recorded instances of their use.”¹²⁹

The idea of using biological agents in warfare is not new. Turning natural ingredients into weapons was practiced in pre-modern times, much more than is commonly thought.¹³⁰ But, like the uses of poisons and chemicals, records of the use of disease as a weapon are rare. Even when the practice is recognized, modern historians lack the evidence to conclude that “historical documentation of the use of biological warfare has always been scarce.”¹³¹ Historians of biochemical warfare accept the common assumption that there is little early evidence of biochemical strategies. The obscurity of the historical record may discourage academic pursuit of the subject.¹³²

Poisoned arrows, poisonous honey, contaminated wine, poisoning of water wells, etc., have long been used as secret weapons. The anthrax attacks of the fall of 2001 have sparked interest in the history of biological warfare. The siege of Kaffa (present-day Feodosija, Ukraine) is often cited as a reminder of the effects of using disease as a biological weapon,¹³³ however, the only account of the Mongols deliberately spreading the plague comes from a single source from the 14th century Genoese writer Gabriele de Mussis, *Historia de Morbo*.

128 “Interpol chief says threat of bioterrorism is real,” *Irish Examiner*, March 27, 2006, <https://www.irishexaminer.com/world/arid-30251202.html>

129 Mark Wheelis, “Biological warfare before 1914,” in Erhard Geissler & John Ellis van Courtland Moon (eds.), *Biological and toxin weapons: research, development and use from the Middle Ages to 1945*, Oxford University Press, London, 1999, pp. 8-34.

130 Among the important studies that addressed biological weapons before 1945 (until 1970), see *The Problem of Chemical and Biological Warfare*, published in six volumes by SIPRI in 2000 and available via the following link <https://www.sipri.org/publications/2000/problem-chemical-and-biological-warfare>

131 James A. Poupard & Linda A. Miller, “History of Biological Warfare: Catapults to Capsomeres,” *Annals of the New York Academy of Sciences*, vol. 666, no. 1, December 1992, pp. 9-20.

132 The adjective “biochemical” is often used as a catch-all term for biological and chemical agents in general. Mark Wheelis, “Biological warfare before 1914,” in Erhard Geissler and John Ellis van Courtland Moon (eds.), *Biological and toxin weapons: research, development and use from the Middle Ages to 1945*, Oxford University Press, London, 1999, pp. 8-34.

133 Mark Wheelis, “Biological Warfare at the 1346 Siege of Caffa,” *Emerging Infectious Diseases*, vol. 8, no. 9, September 2002, pp. 971-975.

The epidemic would have been provoked voluntarily by the Mongolian army, sending the corpses of its plague victims over the walls of the city. His account, long cited as the first known act of biological warfare, is certainly of great historical interest, but also relevant today in assessing the threat of military or terrorist use of biological weapons.¹³⁴

Interest in biological agents is not limited to sectarian, religious or environmental groups. Most individuals and groups that have used biological agents have had traditional criminal motives. Available data suggest that the vast majority of cases have criminal motives, although there is a lack of documented cases of a terrorist group using biological agents just to extort money.

Indeed, the extortion commonly employed by terrorists is often combined with other acts that induce the victim to change his or her behavior. It is therefore crucial to separate the clearly criminal perpetrators from those with political agendas. Bio-crime involves the use of a biological agent to kill, terrorize, or incapacitate one or a few individuals for revenge; or for the desire to extort financial gain.¹³⁵

The ancient strategy of poisoning the enemy with corpses or fecal matter is still of use today. Examples go back to the 6th century BC, when the Assyrians are said to have poisoned enemy wells with rye ergot. During the early 18th century Franco-Indian War, the British are said to have provided blankets of smallpox victims to Native Americans, resulting in their decimation. The history of warfare with biological weapons goes back to mythology, but apart from poisoning wells, poisoned arrows, the use of the plague as a weapon, etc., no one really waged deliberate biological warfare until the modern era.¹³⁶

A biological agent is usually defined as a genetically modified organism that is resistant to all known drugs, highly contagious, and capable of harming thousands of people. However, many suspected attacks do not take place in this way: the experience of bioterrorism concerns mainly small-scale attacks. This implies that vigilance in identifying a biological attack and its countermeasures must be high, as it may diverge from the expected pattern. Having failed to contaminate the local water supply, in 1984 a religious sect in the United States deliberately contaminated restaurant salad bars with *Salmonella typhimurium* to disrupt local elections.

Food is easier to contaminate than water. Terrorists can attack the food chain at several stages: targeting livestock and crops during production, harvest-

134 Rosemay Horrox, *The Black Death*, Manchester University Press, Manchester & New York, 1994, pp. 16-17.

135 Seth W. Carus, *Bioterrorism and Biocrimes. The illicit use of biological agents since 1900*, Center for Counterproliferation Research, National Defense University, Washington, D.C., February 2001.

136 Adrienne Mayor, *Greek Fire, Poison Arrows, and Scorpion Bombs: Biological and Chemical Warfare in the Ancient World*, Overlook Duckworth, New York, 2009; Judith Miller, "Biological Weapons, Literally Older Than Methuselah," *New York Times*, September 19, 1998.

ing, storage, or transportation; and processed foods during processing, manufacturing, storage, transportation, or distribution. Foodborne outbreaks can be a precursor to a bioterrorist attack; but contaminating drinking water requires the addition of unrealistic amounts of biological agents to a city's food supply.¹³⁷

Another example is that of the 2001 anthrax letters case, in which five people died in the United States. In 1993, a cult in Japan carried out an anthrax spore attack with no physical casualties, and white supremacists talk about the coronavirus as a biological weapon.¹³⁸ The Timothy Wilson case shows that “world events influence the time and place of an attack. He says he wants to attack a hospital because of the Covid-19 pandemic and its increased impact through media attention on the health sector. He admits that if he contracts the virus, he will conduct a “lone wolf attack” and try to kill as many as possible.”¹³⁹

On March 24, 2020, the U.S. Department of Justice expanded its definition of terrorism to include the deliberate spread of Covid-19, so that the terrorism charge would apply to any individual who wanted to spread the virus; if it was proven that she/he had acted deliberately, she/he would be charged with terrorism for “intentional exposure and infection of others.” Since the virus appears to meet the definition of a ‘biological agent,’ such acts could potentially implicate the nation's terrorism laws.

This pandemic—like many past crises and emergencies—has been exploited by extremists. Following disturbing reports of how extremist groups are attempting to exploit the Covid-19 crisis, the department warns that “threats or attempts to use Covid-19 as a weapon against Americans will not be tolerated.” The directive calls “attention to the categories of offenses, relevant to the types of pandemic-related crimes we are witnessing. 1 - we know that individuals and businesses are taking advantage of the Covid-19 crisis to use fraudulent or illegal schemes. 2 - you may encounter criminal activity, from malicious hoaxes to threats targeting specific individuals or the public; to intentionally exposing and infecting others with Covid-19,” etc.¹⁴⁰

137 Food terrorism is “an act or threat of deliberate contamination of food for human consumption with chemical, biological, or radionuclear agents for the purpose of injuring or killing civilian populations and/or disrupting economic or political stability.” Institute of Medicine of the National Academy, *Addressing Foodborne Threats to Health: Policies, Practices, and Global Coordination*, National Academy Press, Washington, D.C., 2006, p. 60.

138 For a historical overview see; see Stefan Riedel, “Biological Warfare and Bioterrorism: A Historical Review,” In *Baylor University Medical Center Proceedings*, vol. 17, no. 4, 2004, pp. 400-406.

139 Bridget Johnson, “White Supremacist in COVID-19 Hospital Bomb Plot Allegedly Wanted to Attack Power Grid,” *Homeland Security Today*, March 31, 2020.

140 Deputy Attorney General, “*Department of Justice Enforcement Actions Related to Covid-19: Memorandum For All Heads Of Law Enforcement Components, Heads Of Litigating Divisions. And United States Attorneys*,” Office of the Deputy Attorney General, U.S. Department of Justice, Washington, D.C., March 24, 2020, p. 2.

A quick scan of neo-Nazi forums and white supremacist channels, using jihadist tactics to enrich their strategies¹⁴¹ shows how these individuals use misinformation and conspiracy theories to fuel extremist narratives and fuel their mobilization. These local or international extremists encourage their followers to attack during the panic to create panic, target minorities and immigrants, and celebrate the death of their enemies.

According to a Department of Homeland Security memo, white supremacists and neo-Nazis advocate “the obligation” to spread the virus, if one contracts it. “NGOs such as *The Anti-Defamation League* report that forums such as “What to do if you get Corona 19” advocate “going to your local mosque or synagogue, public transportation, or local multi-ethnic neighborhood.”¹⁴² Neo-Nazi blogs advocate for “exterminating” immigrants and excluding ethnic minorities from the health care system, claiming that the “swastika is the best cure for Covid-19.” Their propaganda blames the “inferior” races for Covid-19 and advocates the permanent closure of borders.

The Islamic State, on the other hand, encourages jihadists to play on the fear and chaos caused by the pandemic to attack vulnerable populations in Europe and the United States. Supporters of the Islamic State make the coronavirus a “soldier of Allah” and urge followers to praise the pandemic, which is hurting the U.S. and European economies. They also make COVID-19 a divine punishment against atheists, Shiites, Christians, and minority peoples in China, Iran, and Italy. Islamist websites and blogs consulted by the author also call for the spread of Covid-19 among infidels, as a “jihad coronavirus.”

Biological weapons can also provide an attractive option for a nation or group unable defend itself in any other way and threatened with massive casualties. Terrorists who have previously suffered such casualties may find biological agents an attractive alternative to conventional weapons because of their relatively low cost, relative accessibility, and ease of production, delivery, and deployment.

Their use, or even a simple threat, can cause serious social chaos, as biological weapons cause much greater destruction and loss of life than nuclear, chemical or conventional weapons, in relation to their mass, manufacturing and storage costs. Thus, these biological agents can be used for strategic deterrence, in addition to their offensive utility on the battlefield. In view of the serious consequences of such an attack, governments must be able to react as soon as possible—even if the variety of bioterrorism pathogens greatly exceeds the means to combat them all.

141 New Jersey Office of Homeland Security and Preparedness, “*White Supremacist Extremists Exploit Jihadist Tactics*,” State of New Jersey, December 16, 2019.

142 Sonam Sheth, “White supremacists discussed using the coronavirus as a bioweapon, explosive internal document reveals,” *Business Insider*, March 22, 2020; Aris Folley, “FBI warns white supremacists encouraging members to spread coronavirus to law enforcement, Jews: report,” *The Hill*, March 22, 2020.

The real social and economic cost of an infectious episode could therefore be far greater than the number of human casualties.

Estimating these costs poses many problems: defining damage and avoiding double counting in various statistics, measuring direct losses. The indirect costs of bioterrorist attacks vary according to their distribution across activities, sectors, countries, and time. Covid-19 has shown that some sectors and activities are more vulnerable than others. The indirect intertemporal implications depend on the nature and scale of the attacks, the type of policies adopted by the state in response to the attacks, etc.

Bioterrorism in the age of the biotechnology revolution

Covid-19 proves it: biological threats increasingly deserve the attention of policymakers and security and public health professionals.¹⁴³ Biotechnology in the age of synthetic biology expands the range of defense risks. Referring to concepts, approaches, and tools that can modify or create biological organisms, synthetic biology aims primarily to reduce the burden of disease, improve agricultural productivity, or solve pollution problems.

Synthetic biologists are at the forefront of engineering living cells and helping to treat diseases, detect toxic compounds in the environment and produce rare drugs. Chemists, biologists, and engineers engaged in this multi-disciplinary field involved in creating and regulating genetic circuits, manipulating biochemical pathways, editing and modifying the genome, notably through molecular assembly. Although the contributions of synthetic biology are very promising, they can also have malicious uses, threatening citizens.¹⁴⁴

Modern technology is seen as a solution to many problems. Enormous savings are being realized through ICT, allowing companies to accurately assess, minimize risk and quickly adapt to change. Operationally, it provides the same results with fewer resources. Armies are increasingly using it to gain a sizeable advantage on the battlefield and to increase the conceptualization of operations. For the military, the technology compresses operational cycles, allows precise strikes at great distances, based on real-time data; also, improved cooperation. But this weapon is double-edged. Fascinated but reluctant, many military thinkers fear the prospects of technology's impact on war.

143 "The time has come to recognize the glaring fact that despite enormous blood/gold expenditures to 'kill, capture, stop' our way to strategic success in counterterrorism, there are more terrorists in the world today than there were on September 11, 2001, and Covid-19 is likely to lead to the creation of more," warns Michael Nagata in a special issue titled "COVID-19 & Counterterrorism," *CTC Sentinel*, vol. 11, Combating Terrorism Center, U.S. Military Academy, West Point, June-July 2018, p. 5.

144 Christina Smolke (ed.), *Synthetic Biology: Parts, Devices and Applications*, Wiley-Blackwell, Weinheim, Germany, 2018.

Thus, the threat of the use of biological agents against the military and civilians seems worse today than it ever was. At least ten countries have biological weapons programs, the full extent of which is unknown.¹⁴⁵ Technological advances are necessarily changing the threat spectrum, making it more difficult to inspect and monitor biological and toxin weapons because of the proliferation of dual-use facilities¹⁴⁶ and the growth of industrial biotechnology.¹⁴⁷

The potential for misuse of dual-use technology is illustrated in genomics research. While this knowledge has improved the ability of governments to detect, prevent and treat infections caused by biowarfare agents, experts point to the possibility of “personalizing” classical biological agents, making them more difficult to detect, diagnose and treat.¹⁴⁸ In addition, biological hazards can arise from a variety of disasters, laboratory accidents and pandemics. For example, an FBI investigation blames the “anthrax envelopes” discovered in the United States on a microbiologist working in a military laboratory.¹⁴⁹

A two-levels analysis enables to assess the effect of a new technology: efficiency and social system. Historically, at the inception of a new technology, actors and populations emphasize its “efficiency” and underestimate or overlook potential effects on the social system. The new technology is embraced for its efficiency; its ability to change the way people entertain themselves, work slowly, etc. The full range of spillovers and impacts is not clear. The full range of spillover effects and dilemmas are related to how these technologies affect thought and work: effects at different levels. The full range of impacts and dilemmas is in the way these technologies affect thinking, working, selective effects, and the transformative power of the new technology is to change old ways of thinking and operating, and to provide new capacities for action.¹⁵⁰

The biotechnological revolution has generated many new methodologies in diagnoses, antimicrobials, and vaccines. The possibility of using biotechnology to

145 Michael K Jacobs, “The history of biologic warfare and bioterrorism,” *Dermatologic Clinics*, vol. 22, no. 3 - July 2004, pp. 231-337.

146 Jonathan B. Tucker, *Innovation, Dual Use, and Security: Managing the Risks of Emerging Biological and Chemical Technologies*, MIT Press, Cambridge & London, 2012.

147 National Research Council, *Industrialization of Biology: A Roadmap to Accelerate the Advanced Manufacturing of Chemicals*, The National Academies Press, Washington, D.C., 2015.

148 Claire M. Fraser & Malcolm R. Dando, “Genomics and Future Biological Weapons,” *Nature Genetics*, vol. 29, no. 3, December 2001, pp. 253-256; John Logan Black, “Genome Projects and Gene Therapy: Gateways to Next Generation Biological Weapons,” *Military Medicine*, vol. 168, no. 11, 2003, pp. 864-871.

149 Office of Public Affairs, “Justice Department and FBI Announce Formal Conclusion of Investigation into 2001 Anthrax Attacks,” U.S. Department of Justice, February 19, 2010. <https://www.justice.gov/opa/pr/justice-department-and-fbi-announce-formal-conclusion-investigation-2001-anthrax-attacks>

150 John Arquilla & David Ronfeldt, “Cyberwar is Coming!” *Comparative Strategy*, vol. 12, 1993, pp. 141-165.

design new “advanced biological warfare agents” must be considered. Biotechnology can also provide applications for weaponizing, disseminating, and delivering biological agents, with new agents targeting specific human biological systems: cardiovascular, gastrointestinal, neurological, or immunological.¹⁵¹

Of course, as biotechnology advances, so do these risks of militarization by governments or non-state actors. For example, the DNA equipment required to synthesize some deadly contagious germs is cheaper and easier to purchase than others.¹⁵² According to experts, “the biotechnology underlying the advanced biological agents can advance very quickly, causing a diverse and elusive spectrum of threats.”¹⁵³

Transgenic plants and animals could be modified to mass produce bioregulatory proteins or toxins. Transgenic insects, such as bees or mosquitoes, could produce and deliver biological toxins. A genetically engineered mosquito would produce and secrete a biological toxin in its saliva, delivering the toxin while feeding. These transgenic insects would probably not go unnoticed; because, developed for “traditional agents,” most countermeasures will be ineffective for advanced biologically based agents such as protein-based transgenics.

Five major attributes of these advanced biological agents have been described: high virulence associated with high specificity; absence of countermeasures for the attacked population; possibility of easily camouflaging the agent; high resistance to adverse situations; and controllability.¹⁵⁴ Thus, assessing the potential vulnerabilities linked to advances in biology and biotechnology seems necessary to answer the following:

- What kind of biology security risks are currently emerging?
- What is their rate of evolution?
- What are the options to mitigate them?

This implies a paradigm shift, with the Covid-19 pandemic creating a climate for this shift. The complexity and global reach of contemporary economies make us more vulnerable to sudden disruptions: this is perhaps the most lasting effect of this pandemic. Societies everywhere are far more attentive to resilience.

151 James B. Petro, Theodore R. Plasse, & Jack A. McNulty, “Biotechnology: impact on biological warfare and biodefense,” *Biosecurity and bioterrorism: biodefense strategy, practice and science*, vol. 1, 2003, pp. 161-168.

152 Ian Goldin & Chris Kutarna, *Age of Discovery: Navigating the Risks and Rewards of our New Renaissance*, St. Martin's Press, New York, 2016.

153 Central Intelligence Agency, “*The Darker Bioweapons Future*,” Washington, D.C., November 2003, p. 2. <https://fas.org/irp/cia/product/bw1103.pdf>

154 Michael Daly, “The Emerging Impact of Genomics on The Development of Biological Weapons-Threats and Benefits Posed by Engineered Extremophiles,” *Clinics in Laboratory Medicine*, vol. 21, no. 3, September 2001, pp. 619-629; Malcolm Dando, *The New Biological Weapons*, Lynne Rienner Publishers, London, 2001, pp. 10-12.

New disruptions are probably inevitable, and now that we know the adverse consequences, individuals, businesses and governments will work to reduce their exposure to such disruptions.

The need for a paradigm shift

The paradigm defines the type of problems to be studied, the criteria by which a solution is evaluated, and the experiments that are acceptable. In this way, it helps to allocate resources: a “national security paradigm” provides decision-makers with a compass that defines strategies and sets medium- and long-term priorities for military forces, aid programs, diplomacy, and intelligence. It also helps prepare the public for what lies.

The ultimate challenge for a decision maker is to set priorities. A conceptual framework—linking events—is an essential tool. Security and defense failures often result from “the inability to define objectives, choose the appropriate means to achieve those objectives, and shape a public opinion willing to pay the necessary price in a timely manner.”¹⁵⁵ Neither automatic nor mechanical, the intellectual framework allows for the development of specific policies.

For a decision-maker facing a pressing or ambiguous situation, this framework is preferable to improvisation. Paradigms gather the processes by which actors act and influence the vision of reality of various publics. Paradigms are interpretive schemes that organize experiences and guide action, providing coherence to seemingly disparate elements, programs, and ideas. Thus, a paradigm guides policy and helps establish priorities.

Including the decision-making process in the game structure helps to confront conflicting options and reveals order in chaotic-looking interactions. While no conceptual framework captures reality in all its complexity, “without a theory, facts remain silent.”¹⁵⁶ Theories are simplified images of reality; starting from the essential factors, they try to make our complex world accessible.

For national security, the paradigm helps set priorities and allocate resources; it sends signals to other governments, the public and parliamentarians about what the government wants to do. Crucial in times of crisis and instability, the strategic paradigm provides perspectives to decision makers. In a chaotic episode, it inspires relevant decisions and actions. The paradigm is thus a kind of “beacon” guiding decision making.

Historically, France has neglected biodefense research, development, acquisition, and doctrine. Terrorist attacks in recent years have drawn more attention

155 Henry Kissinger, “Limits to What the U.S. Can Do in Bosnia,” *The Washington Post*, September 22, 1997.

156 John Keegan, *History of War Volume 1: War in History*, Lesprit Frappeur, Paris, 2000, p. 23.

and resources to medical countermeasures and biological detection systems. Most biodefense initiatives originate in the military, but civilian government agencies are contributing to these efforts.

This field of biodefense lacks strategic direction and remains fragmented: a gap that needs to be filled by instituting a high-level, politically accountable coordination of official and/or societal approaches, conducting regular multi-sectoral simulations, for effective preparedness. This coordination would involve the various sectors concerned in these preparations; build trust and engage stakeholders (legislators, human and animal health, security and foreign affairs actors; private sector; local leaders; and youth).

This strategy aims at unifying the objectives of the policy with the means to achieve them: it is indeed crucial that the policy corresponds to the means to achieve it. For unlike the private sector, governments cannot freely allocate factors of production or define their own objectives. “Control over revenues, inputs and agency objectives is entirely vested in entities outside the agency: legislatures, courts, politicians and interest groups. The constitution or legislation that creates these public bodies assigns them vague objectives, lists broad concerns and leaves it to later political forums to determine their precise meaning. In particular, Parliament has considerable influence in setting their budgets.”¹⁵⁷

Yet these administrations are traditionally resilient: few renew themselves without strong external pressures. Innovative and energetic leadership is crucial to launching any major change. Indeed, implementing change is a complex task for these organizations because of the particular constraints within which they operate. In contrast, “business management focused on the ‘bottom line’ (profits), government management is focused on the ‘top line’ (constraints),” which impacts the state’s ability to act.

Indeed, one difficulty in developing a national strategy is that the priorities are both threats and remedies, and there are many threats and few resources. The decision-making process differs from country to country,¹⁵⁸ and the appointment of a national coordinator helps to address a problem specific to the senior public service: its need for political support because of its lack of control over resources.

Covid-19 has disrupted every aspect of daily life: citizens, businesses, and governments have all felt its impact, which will undoubtedly lead to significant societal changes in risk management. Similarly, gauging the impact of the pandemic has been a major challenge. The unpredictability of a serious infectious epidemic, its speed of spread and the fears of public opinion can be very destabilizing. There is also uncertainty about the ability of global health agencies to take into account the complex political realities on the ground.

157 James Q. Wilson, *Bureaucracy*, Basic Books, New York (USA), 1989, p. 115.

158 James Q. Wilson, *Bureaucracy*, *op.cit.*, pp. 115, 299-300.

The future is being prepared and cannot be predicted. The enormous cost of Covid-19, the multiplication of epidemics in recent years (Ebola, SARS, etc.), techno-scientific progress, the emergence of non-state actors as a strategic threat, etc. All of this justifies a change in the national security paradigm. The growing biological threat may emerge from nature, from a deliberate attack or from an accidental release. The state must foster a culture of preparedness in the field of biothreats; and homeland security agencies must be especially attentive to safety, security, and regulatory requirements.

In the area of counterterrorism, the global pandemic and its aftermath will provide an opportunity to focus on biological agents, which will likely enhance detection and preparedness capabilities:

- 1) Spend prudently to prevent before an epidemic or biological attack strikes, rather than thinking too much, too late.
- 2) Ensure rapid, open and accurate communication between nations and aid agencies, instead of secrecy and territorial disputes.
- 3) Combat disease and prevent panic.

Conclusion

Biological attacks and infectious diseases can cause catastrophic waves of mortality, social disruption, and foment dissent and distrust in government. Nothing is more crucial than quick and decisive action for emergency response. Thus, France cannot sort out what it is preparing for. It must think the unthinkable and learn to deal with bio-threats. Biological risks are becoming a common element of the geopolitical landscape. History has proven that biological pathogens and toxins can be used as weapons.

Thus, a review of preparedness is needed to improve the national biodefense posture. The current situation requires strong government action to optimize national resilience, coordinated efforts in bio-logical detection, hospital preparedness, data collection and bio-defense planning. The state must develop contingency plans, including projected needs and our technological gaps in protection, detection, decontamination, and medical biodefense.

The challenge of new protection systems is their load, cost, length of performance and effectiveness on a wide range of agents. They require devices that capture, block, or destroy agents better than the current ones. For risk analysis, the problem is the wear and tear of time and the cost and price of developing biosecurity and biodefense programs.

The most damaging psychological bias is the “recession effect”¹⁵⁹ (focusing

¹⁵⁹ Hermann Ebbinghaus, *On memory: A contribution to experimental psychology*, Teachers College, New York, 2013.

on the most recent), which prevents a thorough examination of the past and a broad view of the future. Recently, other threats have predominated: terrorism, cyber security, drones. But any post-coronavirus strategy will need to integrate bio-threats and infectious diseases. The Covid-19 pandemic did not radically change the security environment. It has not changed the course of history, but accelerated it.