

Covid-19 Plague, a Biological Weapon or Retribution of Nature: Struggle of Mankind against Invisible Might

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Abstract

Plagues have shaped our history to some extent as they have been the biggest killers of people and led human beings inevitably to think about some very pertinent questions. The outbreak of plagues in the past raised the whole issue of man's relationship with God. How could it be that calamities of this kind could occur with omnipresent, all-knowing and omniscient divinity? Who would allow His children to be tortured in anguish, in vast numbers? Diseases do not afflict societies in random and in chaotic ways. They are ordered events because microbes selectively expand and diffuse themselves to explore ecological niches that human beings have created. In an age where scientists are working on life extension or immortality, we are facing an existential threat due to an attack by an invisible enemy, i.e., Covid-19. This existential crisis demands a wholistic analysis of epidemics or pandemics caused by microbes. The author in this article has examined the plagues from a historical, descriptive and comparative method to get an in-depth knowledge of outbreaks.

Keywords: Covid-19 Plague, Pandemic, Biological Weapons, Retribution, Nature, Germs

*Nature [is] that lovely lady, to whom we owe Polio,
Leprosy, Smallpox, Syphilis, Tuberculosis, Cancer
-Stanley Norman Cohen*

Plagues are a category of disease that seems to hold up the mirror to human beings as to who we are. That is to say, they have everything to do with our relationship to our mortality, to death, to our lives. They also reflect our relationships with the environment-the built environment that we create and the natural environment that responds. They show the moral relationship that we have toward each other as people, and we are seeing that today. Plagues have shaped our history in part as they have led human beings inevitably to think about those big questions. The outbreak of plague raised the whole question of man's

relationship with God. How could it be that an event of this kind could occur with a wise, all-knowing and omniscient divinity? Who would allow children to be tortured in anguish, in vast numbers? Diseases do not afflict societies in random and chaotic ways. They are ordered events because microbes selectively expand and diffuse themselves to explore ecological niches that human beings have created. Susan Sontag wrote in illness as metaphor, *“Dying has come to be regarded in advanced industrial societies as a shameful, unnatural event so that disease which is widely considered a synonym for death has come to seem shameful, something to deny.”* Max More, the founder of the Extropy Institute, in his talk on *“The Ultra-human Revolution: Amendment to the Human Constitution”* also complained about the unfairness of dying in the age of info-tech and biotech revolution. He made a call to amend the human constitution and proposed seven amendments. The elimination of death in favour of eternal life through biotechnology and nanotechnology was the foremost important amendment sought by him. In an age where scientists are working on life extension or immortality, we are facing an existential threat due to an attack by an invisible enemy i.e., Covid-19.

We have been living with microbes, i.e., viruses and bacteria for at least for 10,000 years, since our ancestors started manipulating the lives of a few animals and plant species through agricultural revolution and semi-permanent settlements. These permanent settlements became hotbeds for infectious diseases due to weaken immune system caused by our reliance on porridge rather than breast milk and nuts and other forest produce. Our ancestors’ ability to decipher Nature’s secret, enabled them to domesticate animals and cultivate wheat, rice, maize, potatoes, millet, and barley. Gradually, they abandoned the life of hunter-gatherers and settled down to enjoy the pleasant, satiated life of farmers. The story of Cain and Abel beautifully narrated in Genesis shed light on the changing pattern of life of *Homo sapiens* from hunter-gatherers to farmers. According to the story, *“Abel became a shepherd and kept flocks, while Cain tilted the soil. Time passed and Cain brought some of the produce of the soil as an offering for Yahweh, while Abel for his part brought the firstborn of his flock and some of their fat as well. Yahweh looked with favour on Abel and his offering. But HE did not look with favour on Cain and his offering, and Cain was very angry and downcast.”* This tale gives a lesson to humankind. In his famous work *Sapiens*, Yuval Noah Harari argued that the foragers knew the secret of Nature long before the

agricultural revolution since their survival depended on an intimate knowledge of the animals they hunted and the plants they gathered. However, the agricultural revolution left farmers with lives generally more difficult and less satisfying than foragers. According to Yuval's thesis, hunter-gatherers were less in danger of starvation and disease. The life of a farmer is less secure than that of a hunter-gatherer. The transformation from hunting and collecting economy, perhaps beginning with the cultivation of wild cereals, to the establishment of permanent villages and a mixed agricultural economy with fully domesticated races of plants and animals took place over at least 3,000 years. Moreover, this transition to agriculture brought about a plethora of ailments, such as slipped discs, arthritis, hernias, and other bacterial and viral infections.

Throughout history, many sicknesses have been described with symptoms that resemble viral infections i.e., Flu-like **symptoms**, such as sore throat, mild fever, fatigue and muscle aches, mild chest discomfort, shortness of breath, and nausea etc. Although we cannot know for sure whether these earliest reports of illness were, in fact, due to viral infections, many researchers believe that they were. The viral infection is thought to have originated in Egypt and Mesopotamia. Many biblical researchers believe that in Moses' time, during the ten plagues of Egypt, viral infection may have caused what was known as the fifth, sixth, and seventh plague.

"Yahweh, God of the Hebrews, says this: Let my people go and worship me. For this time I am going to inflict all my plagues on you, on your officials and on your subjects, so that you will know that there is no one like me in the whole world. Had I stretched out my hand to strike you and your subjects with pestilence, you would have been swept from the earth."
(Exodus:9:13-16)

Ancient Greece and Rome were also well acquainted with viral and bacterial infections. Many of the ancient writings of the most famous scholars from those times have illustrated various examples of such diseases. For example, many scholars think Homer depicted anthrax in *The Iliad*, written around 700 BC, and in poems by Virgil, who lived from 70-19 B.C. The Athenian historian Thucydides himself took ill during a raging epidemic in Athens, when the entire population was concentrated in that city during the war

against Sparta (431 B.C). Some even suggest that anthrax may have contributed to the fall of Rome. William H. McNeill in his seminal work “Plagues and Peoples,” argued that the population of the Roman Empire suffered from imported viruses that ultimately led to the downfall of the Empire in the West. The Antonine Plague of 165 AD to 180 AD that killed an estimated 5 million people in the Roman Empire is worth mentioning here. Many biblical scholars think that viruses and bacteria are Nature’s weapons, which Nature uses to punish the Law of Nature violators. Most people locate God in Nature as we feel His presence in the reality that surrounds us, and for some people, Nature is that reality in which God expresses His Thought.

Bubonic plague, commonly known as the ‘Black Death’ of the mid-14th century, is widely considered the cause of the deadliest pandemic in recorded history. Dr Melissa Conrad Stoppler writes that “*the so-called Black Death, or pandemic of the Middle Ages, began in China and made its way to Europe, causing the death of 60% of the entire population.*” Bubonic plague is caused by a bacterium, *Yersinia pestis*, which fleas carry from rodents to humans killed as many as 200 million people in just a few years. However, *anthrax*, *hemorrhagic viral fever*, and *louse-borne typhus* have also been considered responsible for the same as per the new research studies. During the Black Death period in Europe (1347-51), near about one-third and one-half of the European continent’s population perished, entire cities were emptied, and entire villages were wiped out. The Jews, enemies of civilisation, were accused of poisoning the wells during the Black Death plague. Approximately 2000 Jews were murdered in Strasbourg, and the entire community was wiped out.

Black Death or Black Plague was global and moved from country to country through travellers and traders moving across the Mongol empire. As per the observation of Prof. Aviad Kleinberg of Tel Aviv University, which he made in his famous book titled “A Short History of the Medieval West”, the plague broke out in China. Traders transmitted it via the Silk Route to the Crimean Peninsula, and it continued into Constantinople and the shores of the Mediterranean Sea. From Italy, it progresses north deep into Europe, reaching as far as Greenland. In his book “Ideas: A History of Thought and Invention from Fire to Freud,” Peter Watson established a great deal of link between the Black Death and Renaissance. As a result of the Black Death, many areas of the countryside were short of people. It had

the effect of forcing many landlords to give in to peasant demands, and the resulting improvement in living standards has been borne out by archaeological discoveries that have demonstrated a shift from earthenware to metal cooking pots.

The plague had two main effects on the Church and religious life. The very great number of deaths made people pessimistic and drove them inwards, towards a more private faith than hitherto, and there was a rise in mysticism. There was also a new focus on the body of Christ: whereas Lateran IV had stipulated that Catholics should take communion at least once a year, the faithful now sought to partake as often as they could. At the same time, of course, many people went in the opposite direction, psychologically speaking, and started to doubt the existence of a providential God. The Black Death crushed the belief or altered it enormously. The second main effect of the plague was on the structure of the Church itself. Approximately 40 per cent of priests had been carried off, and in many cases, very young clergy were appointed to replace those who had died. These young priests were less educated than their predecessors, which reinforced the fact that the Church's authority in learning was reduced. Any link between the Black Death and the Renaissance is thus tenuous, and the specific evidence goes both ways. Yes, the less well-educated clergy may have contributed to a lessening of clerical authority. Still, the greater piety in the wake of the plague is the very opposite of what we see in the Renaissance. Perhaps the best that can be said is that, in helping to destroy the old feudal system, which was already waning, the Black Death delivered the *coup de grace*, allowing a new system to flourish. According to Prof. Moshe Feinsod, "*The waves of Black Death and the tremendous loss of human life, which affected all strata of the population, demonstrated that no one was immune to the disease-not the clergy, not the nobles and not the simple people working in the fields. It triggered a weakening of the social order and essentially destroyed feudalism. The value of the worker increased. Although the worker would subsequently be suppressed once more, it was different from the institutional system that had been practised until then.*"

Every hundred years or so, a great plague attacks humankind; some of them are particularly lethal to humanity; others less so. The Small Pox outbreak in the 1500s killed an estimated 56 million, and the majorities were children. In 1918, the Spanish Flu epidemic, also known as the influenza pandemic that struck at the end of World War-I, killed approximately 40 to 50 million. In 1957 Asian flu broke out. The HIV/AIDS

pandemic, which emerged in the late 1960s, has taken the lives of 25 million to 35 million people to date. The flu epidemic that began in Hong Kong broke out in 1968, which killed tens of thousands around the globe within two years. In Asia, SARS epidemic began in November 2002 in China's Guangdong province, spread rapidly to other countries but disappeared by June 2003 after claiming 774 victims. The bird flu and swine flu are two recent epidemics, which killed 600,000 people. In 2012 Middle East Respiratory Syndrome (MERS) broke out in Saudi Arabia, having a CFR of 36%.

The Covid-19 is just one more epidemic in a long line of epidemics that have struck fear into our hearts. Today, with globalisation, the Covid-19 epidemic is hitting everyone, and we have not yet developed an approach to comprehending it other than to recognise our need for mutual responsibility in society. We are looking to the history of pandemics to find answers or explanations about the Covid-19 outbreak, which seems to spread easily from person to person. This very Nature of the Covid-19 outbreak makes it unique. Although the Covid-19 virus is contagious, the contagious period remains to be determined. Recent findings suggest that it may be contagious even in the incubation period when the patient shows no symptoms.

Moreover, older people are more susceptible to serious symptoms, like heart disease, lung disease, or diabetes. Unfortunately, no cure or vaccine has yet been developed for Covid-19 infection, with treatment being supportive. The Covid-19 pandemic owes one of its major features to the Black Death outbreak, i.e., quarantines. The Covid-19 death toll has well surpassed that of MERS and SARS. It is projected by health officials to climb to more than a few million if it continues to spread at the current rate, as in the age of globalisation, the contagion is faster and easier than ever. However, the hope is that the measures enacted to self-isolate and self-quarantine will lower the death toll. As per the WHO, the CFR for Covid-19 is 4.5%, which is much lower than MERS and SARS. CFRs of MERS and SARS are 10% and 36%, respectively. According to some estimates, 60% of the world population could be infected, and a few million could die in a much worse-case scenario.

The common thread between all large-scale epidemics is that they were global and caused widespread hysteria. Epidemics have been transmitted from one country to another in the past; however, globalisation has accelerated Covid-19 speed and scope. Epidemics go hand in hand with globalisation and spread from place to place via trade and tourism

routes. People are looking for explanations for broke out of these plagues throughout humankind history. There were places where Jews or lepers were accused of causing disease; however, customary explanations were that it was the spread of poisonous vapours or punishment by Nature. For those, who locate God in Nature, this crisis of humankind history is altering our belief in God enormously. We turn out to be God's equal as we are altering Nature or creating Nature with new scientific discoveries and technological innovations.

Despite having the ability to create like Nature or destroy creation, we are feeling helpless before Covid-19. This helplessness draws our attention to the following verses of the Quran: *Were the truth to follow their caprices, the heavens and the earth and those therein would have been corrupted. Nay, We gave them their reminder, but they turned away from their reminder (Al-Muminun: 71). And work not corruption upon the earth after it has been set aright, but call upon Him in fear and hope. Surely the Mercy of God is ever nigh unto the virtuous (Al-Araf: 56). And We decreed for the Children of Israel in the book, "Surely you will work corruption upon earth twice, and you will ascend to great heights" (Al-Isra:4). Those who break God's Pact after accepting His Covenant, and sever what God has commanded be joined, and work corruption upon the earth, it is they who are losers (Al-Baqarah: 27). And when he turns away, he endeavours on the earth to work corruption therein and to destroy tillage and offspring, but God does not love corruption (Al-Baqarah: 205). And in the city, there were nine persons working corruption in the land and not setting matters aright (Al-Naml: 48). And be good as God has been good to you. Seek not to work corruption upon the earth. Surely God loves not the workers of corruption (Al-Qasas:77). Hast thou not seen how thy Lord dealt with Ad, Iram the pillared, the like of which was never created in all the land, and Thamud who hollowed the rocks in the valley, and Pharaoh of the tent poles, who tyrannised the land and increased corruption therein. So thy Lord poured upon them the scourge of punishment (Al-Fajr:6-13).* These verses give an idea about working corruption upon the earth, which became responsible for fetching Nature's wrath upon the previous civilisations. *"Then the wrongdoers among them substituted another word in place of the one told to them. So We sent upon them a scourge from the sky as a punishment for their wrong-doing" (Al-Araf: 162).*

Henryk Skolimowski, in his lecture on *“The Reality and Illusion of Power”*, stated, *“The elevation of the myth of power to its present and dangerous position (in western civilisation) has happened because western man has given up one form of salvation and has embarked (in the post Renaissance times) on other forms. The idea of salvation was removed from heaven and placed squarely on earth. In times, this salvation came to signify gratification in earthly terms alone. This meant using the earth, mastering the earth, subjugating the earth. The enjoyment of the fruit of the earth was only a part of the scheme; the other part was the enjoyment of power over the earth, over Nature, over things.”* Due to this typical attitude of industrial man, a wide spread of pollution is being observed in biotic and abiotic factors, including the terrestrial environment and aquatic environment. Educated people are well aware that our efforts of mastering the earth, subjugating the earth have polluted terrestrial, geological, atmospheric, zoological, human, aquatic, and psychological life of all living organism. We are all aware of the side effects of extensive utilisation of inorganic elements in modern industrial society on a living organism such as Arsenic, Benzene, Cadmium, Chlorine, Carbon Monoxide, Fluoride Ion, Hydrocarbons, Formaldehyde, Hydrochloride, Hydrogen Fluoride, Mercury, Nitric Acid, Nitrous Acid, Hydrogen Sulfide, Sulphuric Acid, Sulphur dioxide and Hydroxylion, Maganese, Nickel, Nitric Oxide, Ozone, Hydroxyl radical, Peroxyacetyl Nitrate, Lead, Silicon Tetrafluoride, Sulphur dioxide. Most of the diseases which caught us are in one way or another way generated by these inorganic elements.

In his book *The End of Nature*, Bill Mckibben said, *“We have killed off nature, the world entirely independent of us which was here before we arrived and which encircled and supported our human society”*. This act of altering Nature or creating Nature is referred to as “humanisation of nature” or “Denaturalization” or “Dehumanization of Man”. In his edited book titled *“Gaia: An Atlas of Planet Management,”* Norman Myers called man as *“incipient planet managers”*. As per Bill Mckibben observation, *“For the first time we are on the verge of eliminating a natural domain untouched or unmanipulated by human activity.”* This observation of Bill Mckibben has to be analysed in the light of the Quranic verses (*Al-Jumuah: 5-8*), which fleshed light on the basic Nature of the people, who spread corruption on the earth (biotic and abiotic environment).

The Industrial Revolution and modern scientific development in biotechnology, nanotechnology, and information technology have corrupted the atmosphere, biosphere, hydrosphere, inorganics, plants, animates, and astrophysical balance. The water quality appears to be vulnerable to deterioration across the globe due to the increased use of agricultural pesticides to respond to climate change. There is an increased risk of forest fires like Australia and Brazil, which will result in drought and flood. Our failure to recognise the close link between our society, the environment and the climate poses an existential threat to humankind. In the modern world, humankind is at a war of attrition.

Is Nature taking vengeance as we have distorted the immutable order of Nature? Is Nature still in charge or still our master in this unnatural world? Is humanity alone against this invisible force? Is there no meaning in life outside of human solidarity? Could we take lessons from the outbreak of the Covid-19 plague in the light of Dr James Lovelock's "*Gaia hypothesis*"? This hypothesis argues that "*The planet earth is not simply an environment for life but a living organism, a self-sustaining system, a system that modifies its surroundings to ensure its survival. The atmosphere, the oceans, the climate, and the crust of the earth are regulated at a state comfortable for life because of the behaviour of the living organism.*" Is Nature going to correct human behaviour and strike a balance of life on the earth through the Covid-19 plague?

For ages, human beings have been working hard to find scientific explanations of the occurrence of plagues. Maret gave the first clinical descriptions of coetaneous anthrax in 1752 and Fournier in 1769. Before this, anthrax had only been described through historical accounts. Scientist Robert Koch studied *Bacillus anthracis*, the bacterium that causes anthrax. He discovered that the bacteria formed spores and survived for very long periods and in many different environments. Koch decided to use anthrax bacteria in one of his most critical historical experiments, in which he isolated and grew *Bacillus anthracis* in pure culture and injected animals with the bacteria. Using what he observed in this study, he described how the microbe injected into the animals caused it. From these studies, he was also able to determine the life cycle of anthrax bacteria. He demonstrated what became known as Koch's postulates, which demonstrate a causal relationship between a specific micro-organism and a disease.

During the 1800s, doctors saw anthrax cases but did not yet have a diagnosis for the disease. During this time, the organism that causes anthrax had not yet been discovered, but doctors had noticed a link between the disease and the animal hair industry. Because of this, the disease became known as “wool sorters disease.” By the middle of the century, early researchers had associated the disease with the presence of rod-shaped bodies that were seen in the blood of infected animals. These bodies were eventually identified as bacteria and given the name *Bacillus anthracis*.

Louis Pasteur, another prominent scientist, took Koch’s work a step further, trying to fully prove how anthrax was spread and how it made people or animals sick. Pasteur also worked to create a vaccine for anthrax. In his experiment, Pasteur gave 25 animals two shots of an anthrax vaccine he had created with weakened anthrax bacteria. After he gave both rounds of the vaccine to these animals, he injected them with live anthrax bacteria. He also injected live bacteria into 25 other animals that had not been vaccinated. Each of the vaccinated animals survived, while the 25 that were not vaccinated died.

Much knowledge was gained about anthrax in the 1800s. As a result, animal and human anthrax cases in the United States, Britain, and Germany were well documented in the early 1900s. However, there were still places where anthrax cases had not been documented, such as Russia, Asia, India and Africa. Because of the high number of contaminated animal products imported from these countries, it was known that anthrax had to be widespread in these regions.

Max Sterne successfully created the anthrax live spore vaccine for animals. This vaccine is still used in animals in most countries. Because of the introduction of routine vaccination of animals against anthrax and the improvements in animal product processing procedures, the number of cases of anthrax in humans declined. This decline was so significant that during the entire 20th century, there were only 18 cases of inhalation anthrax in the United States. Penicillin had been discovered in 1928, but it was not until 1944 when it was first used to treat anthrax. Penicillin became the drug of choice for treating anthrax, and it replaced all previous therapies, such as serum therapies and chemotherapies.

The first anthrax vaccine for humans was created. This anthrax vaccine was tested in a group of goat hair mill workers. Volunteers were given either the vaccine or a placebo (a shot that does not have the vaccine in it). The volunteers were then followed over a 2-year

period. This study determined that the vaccine was 92.5% effective in preventing cutaneous anthrax. After the study, the vaccine was made available to people working in goat hair processing mills in the United States.

An updated human anthrax vaccine was released, replacing the 1950s vaccine. It is essentially the same vaccine used today. A drum-maker from New York City got sick while on tour with a dance troupe in Pennsylvania. He had just returned from Africa with four goat skins that he planned to use to make drums. He said that when he processed the goat skins to remove the hair, he did not use chemicals on the skins to kill germs or wear protection while handling the skins. He also reported that while he processed the skins, hair and dust particles floated into the air. Four days after he last had contact with the goatskins, he began having breathing problems and was hospitalised. Five days later, he was diagnosed with inhalation anthrax. Public health investigators determined he had been exposed to anthrax while processing the goat skins he brought home from Africa. When he scraped the hair from the skins, the anthrax spores were released into the air, and he breathed them in. The spores got into his lungs and caused him to become ill. It was the first time in 30 years that a case of naturally acquired anthrax was reported in the United States.

A woman in Connecticut was diagnosed with gastrointestinal anthrax. Public health investigators learned that the woman had participated in a drumming event the day before she became ill. The drums used at the event and the event space were all tested for contamination with anthrax spores. Two animal skin drums were found to have anthrax spores on them, and spores were also found in the room where the drumming took place and in other rooms in the building. Investigators determined that the spores were released into the air while the contaminated drums were played. After two months in the hospital, the woman recovered and was released from the hospital.

Early in 2010, a small outbreak of anthrax occurred in the United Kingdom and Germany. All of the patients who came to the hospital were illicit drug users who had used heroin before having symptoms. Anthrax in these patients did not look like typical cutaneous anthrax. Many had swelling and infection of the deeper layers of skin, but they didn't have a raised sore with a black centre – the tell-tale sign of cutaneous anthrax. Doctors recognised this anthrax as a new type of anthrax, calling it injection anthrax. Doctors wondered where the anthrax spores came from and how they were injected into the drug

users. While no anthrax was found in the heroin itself, the evidence gathered by epidemiologists strongly suggested that was anthrax was in the heroin. Public health officials believe that the anthrax spores were in the heroin and that when the patients injected the drug into their bodies, they also injected anthrax spores.

A retired Florida man and his wife travelled for three weeks on a cross-country trip that took them through Wyoming, Montana and the Dakotas, and they visited many state parks. The man got sick when they arrived in Minnesota. He went to the emergency room complaining of flu-like symptoms and was originally diagnosed with community-acquired pneumonia. A doctor, who had grown up on a cattle farm and was familiar with anthrax, felt that this diagnosis was not right and ordered more tests; the tests found bacteria in his blood that looked like anthrax bacteria. His blood samples were sent to the Minnesota Public Health Laboratory, where his anthrax illness was confirmed. The patient got treatment immediately as the doctors at the hospital were able to diagnose anthrax quickly. A specialised antitoxin (anthrax immunoglobulin) was used to treat the patient. After three weeks in the hospital, the patient fully recovered and was sent home. A case of naturally occurring inhalation anthrax is infrequent in the United States, so to rule out any possible bioterrorism threats, the FBI was called in to investigate the case. The FBI determined that the man had inhaled the anthrax spores in a natural environment, and there was no threat to anyone else.

Epidemics caused by Biological Weapon

The Mongols, who controlled the Crimean Peninsula at that time, decided to exploit the pandemic to make further conquests. Consequently, when they besieged the city of Caffa, they threw the corpses of their comrades who had died of the plague over the city walls. The fleas that carried the bubonic bacteria rapidly migrated from the dead to the living and claimed many victims, which is considered the first-ever use of biological warfare. In January 1998, Richard Betts, a distinguished security academician, wrote an article titled "*The New Threat of Mass Destruction*", published in the Journal Foreign Affairs, which signalled a new line. He argued that though efforts to use Chemical Biological Weapons (CBW) against American interests had so far proved unsuccessful, this might be due not to any deliberate restraint but lack of expertise. If terrorists decide that they want to stun American policymakers by inflicting enormous damage, weapons of mass destruction

become more attractive at the same time as they are becoming more accessible. As many countries maintain viruses and other pathogens of disease for military application, accidents in which such weapons find their way into the outside world have already occurred.

The work of scientist Robert Koch in the 1800s led to the development of more modern microbiology experiments. This increase in more sophisticated experiments also created the knowledge of how to grow and produce large stocks of specific germs. The first deliberate uses of microbes as an act of aggression were recorded in the early decades of the 1900s, during World War I. There is evidence that the German army used microbes to secretly infect livestock and animal feed traded to the Allied Nations by neutral partners. An example of this undercover biological warfare was the infection of Argentinian livestock intended for trade with the allied forces, resulting in the death of 200 mules in 1917 and 1918.

After the chemical and biological horrors of WWI, a diplomatic attempt was made to limit the use and creation of this kind of warfare. The Geneva Protocol for the Prevention of the Use in War of Asphyxiating, Poisonous or other Gases and Bacteriological Methods of Warfare was created. This treaty was a significant step in trying to stop the use of biological agents during the war. However, it did not specifically outlaw the research or production of biological agents. Many countries agreed to the treaty but then created amendments to allow for the use of biological weapons during retaliation. After the Geneva Convention, interest in germs primarily focused on preventing disease in livestock and improving the Pasteur vaccine.

Japan began producing germs to be used as a weapon and researched with biological weapons in Japanese-occupied Manchuria. During this time, prisoners were infected with germs and other deadly diseases. It was later discovered that during this program, the Japanese attacked at least eleven Chinese cities with microbes and other biological agents by spraying them directly onto homes from aircraft.

A bio-weapon program was started in the United States. The United States conducted experiments with anthrax, among other biologic agents, at testing sites in Mississippi and Utah. More than 5,000 bombs were filled with germs in preparation for a response to any possible attacks from Germany. Great Britain also began to experiment with germs for bio-weapons on a small island off the coast of Scotland called Gruinard Island. They tested the

widespread release of anthrax by releasing bombs containing the germ over the island, where eighty sheep had been placed. All of the sheep died from anthrax. One of the most important findings from this experiment was how long anthrax stays in the environment after a release. The island remained uninhabitable until 1986. Great Britain decided to decontaminate it by killing all of the anthrax spores in 1986. After a year of soaking the island in a mixture of formaldehyde and seawater, the island was considered disinfected.

During the Korean War, U.S. bio-weapon programs were expanded. This expansion included the creation of a program to develop vaccines and treatments to protect troops against biological agents. By 1960, the United States possessed an extensive collection of bio-weapons, including many types of bacteria, viruses, fungi, and toxins. During the late 1960s, there was a growing concern, internationally, about the use of biological weapons and the Geneva Protocol's ineffectiveness. In July of 1968, Great Britain submitted a proposal to the Committee on Disarmament of the United Nations, which would prohibit the development, production, and stockpiling of biological agents. This proposal also outlined the need for inspections for alleged violators. Several months later, The Warsaw Pact nations submitted a similar proposal. In 1969, President Nixon terminated the U.S. bio-weapon program through an executive order. This executive order stopped offensive bio-weapon research and production of the weapons, and it also called for the destruction of the arsenal. The United States also adopted the policy never to use any biological or toxic weapons under any circumstances. After this, research efforts in the United States became solely directed toward creating defensive methods like vaccines, treatments, and diagnostic tests for potential biologic threats.

The 1972 Convention on the Prohibition of the Development, Production, and Stockpiling of Biological and Toxin Weapons and on Their Destruction was later created after the proposals of Great Britain and the Warsaw Pact nations. This treaty prohibited the development, possession, and stockpiling of pathogens or toxins. The treaty also required parties to destroy stockpiles of bio-weapons within nine months of signing the treaty. The treaty was ratified in April of 1972, with more than 100 nations signing it, including Iraq, the United States, and the Soviet Union. Between 1971 and 1972, the United States destroyed pathogens and stockpiles of biological weapons. Small amounts of specific pathogens were kept so they could be used to test new treatments and vaccines.

In April and May of 1979, an unusual outbreak of anthrax was reported in the city of Sverdlovsk, USSR. However, reports of this outbreak did not begin to surface in Western news until early 1980. Later that year, articles in Soviet medical, veterinary, and legal journals described the outbreak as naturally occurring in livestock, causing 96 cases of anthrax in humans. Of these cases, 79 were described as gastrointestinal anthrax, and 17 of them were cutaneous anthrax. Soviet officials reported that 64 of these 96 people died from gastrointestinal anthrax.

Internationally, there was a great debate about the data presented from this outbreak and its accuracy. Some speculated that the outbreak was not naturally occurring among livestock but resulted from activities banned by the Biological Weapons Convention of 1972 (Convention on the Prohibition of the Development, Production, and Stockpiling of Biological and Toxin Weapons and on Their Destruction). All of the cases occurred within 4 kilometres (about 2½ miles) downwind from a Soviet military microbiology facility, and it was suspected that the cases were from the accidental airborne release of anthrax spores. Years later, Western analysts were permitted to review the outbreak to address the speculation. These analysts used data to determine that the anthrax outbreak did occur from the microbiology facility and was the largest outbreak of inhalation anthrax in history. Despite these findings, the Soviet Union maintained that the outbreak was from meat contaminated with anthrax spores. In 1992, then-president of Russia, Boris Yeltsin, admitted that the outbreak was exactly what Western analysts had determined. He stated that the air filters at the biologic facility had not been properly installed the morning of the release, allowing anthrax spores to spew out of the facility.

Before 2001, the last case of inhalation germs reported in the United States was in 1976. After the September 11 attacks on the World Trade Center and Pentagon, letters filled with a white powder containing anthrax spores were mailed to two U.S. Senators' offices and news media agencies along the East Coast. Authorities recovered four letters, postmarked September 18, 2001, and October 9, 2001. The powder form allowed anthrax to float in the air and for it to be breathed in. The powder from these letters contaminated the postal facilities they were processed through as well as the buildings where they were opened.

Until the first few people became ill with anthrax, Americans were unaware of this attack. The first case of inhalation anthrax was diagnosed on October 4, 2001. During October and November of 2001, there were a total of 11 confirmed cases of inhalation anthrax and 11 confirmed cases of cutaneous anthrax. Of the 11 cases of inhalation anthrax, seven of the cases were postal workers who handled the letters or worked in a postal facility where the letters were processed. Two cases were from the AMI Publishing Company, where a photo editor received a contaminated letter. The last two cases were the hardest in which to determine exposure: a 94-year old Connecticut woman and a New York City hospital employee. Investigators thought that the Connecticut women's mail might have been cross-contaminated in a mail facility; however, no anthrax spores were ever found in her home. The exposure source of the New York City hospital employee is still unknown. Of the 22 people who got sick with anthrax in 2001, five of them died. All of the people who died had inhalation anthrax. The most severe form of the disease. In all, 43 people tested positive for exposure to anthrax. Furthermore, 10,000 more people were considered at risk of possible exposure to anthrax.

Before this event, there had never been an intentional release of anthrax in the United States. The FBI conducted an intense 7-year investigation into who may have sent the contaminated letters. Many years after the attacks, advancements in genetic testing allowed the FBI to conduct more complex testing of the attack's spores. Once the spores were analysed, it was determined they came from a strain called the Ames strain and from a single spore batch known as RMR-1029 from a specific research lab. The attack and the subsequent investigation came to be known as Amerithrax. The FBI officially concluded the Amerithrax investigation on February 19, 2010.

Covid-19 could not possibly be natural. It must have been seeded by the U.S. government, Israel or the Gates Foundation; cooked up in a secret Wuhan laboratory or a CIA biological weapon against China. It is being asserted that this virus is not natural but human-made. As per Brian Stableford's observation in his famous book *Future Man*, genetic engineering "*will eventually enable us to turn the working of all living things on earth-the entire biosphere to the particular advantage of our species.*" In 1954, Richard Matheson wrote a novel titled "*I am Legend*". It is a story set in New York City. The story revolves around a genetically-reengineered measles virus, which was initially created to

cure cancer. However, it turns lethal and has wiped out most of humankind, leaving a U.S Army virologist Lt. Col. Robert Neville as the last human in New York, other than nocturnal mutants. Robert Neville is immune to the virus, and he works to develop a cure while defending himself against the hostile mutants. The virus kills 90% (5.4 billion out of 6 billion) of the world's population and turns 9.8% (588 million) into vampires. Cannibalistic mutants called Darkseekers, who are incredibly vulnerable to sunlight, kill 0.2% (12 million) who were immune to the virus. The Hollywood movie, *Aeon Flux*, released in 2005, depicted that in 2011, a deadly pathogenic virus killed 99% of the earth's population, forcing the survivors to regroup and scatter across the earth. The antidote to the virus made human infertile and, cloning is required to survive the human race. Is humanity under such existential threat due to Covid-19, which is a genetically re-engineered virus developed in Wuhan for military purposes?

The Hollywood movie *Contagion*, which was released on September 9, 2011, depicted the spread of a virus transmitted by fomites. As the novel virus spreads, several cities are placed under quarantine, and looting and violence break out. Doctors of the Centre for Disease Control and Prevention express their fears that the disease is a bio-weapon. However, it is determined by the researchers that the virus is a mix of genetic material from pig- and bat-borne viruses, which originated from Hong Kong. The scientists could not develop a cure as they cannot discover a cell culture to grow the newly identified MEV-1. It is projected that 1 in 12 of the world population will be infected, with a 25–30% mortality rate. By the time vaccine developed by the sincere efforts of a doctor, the death toll has reached 2.5 million in the U.S. and 26 million worldwide. At the end of the movie, in a flashback, it is shown that a bulldozer knocks down a tree in a rainforest in China, disturbing some bats. One finds shelter in a pig farm and drops a piece of banana, which a pig eats. The pig is slaughtered and prepared by a chef in a Macau casino, who shakes hands with Beth, transmitting the virus. The spread of the Covid-19 plague reminds us of the threat simulated in the movie *Contagion*.

Is this Covid-19 genetically modified micro-organism? For example, in the year 1980, Ananda Chakrabarty, a General Electric researcher, had developed a strain of bacteria that would degrade four of the major components of the crude oil in an oil spill; it could chew up the sludge. It is an example of a human-made micro-organism. Bill McKibben argues

that it is the simple act of creating new life forms that change the world that puts us forever in the deity business. Is Covid-19 a human-made virus as depicted in the Sci-Fi movie *Resident Evil: The Final Chapter*? In the movie, Dr James Marcus, the Umbrella Corporation founder, developed the *T-Virus* to cure his daughter Alicia, who was dying due to Progeria. However, instead of curing the diseased one, this T-Virus transformed or re-animated them into a rabid zombie. Dr Alexander Isaacs, the co-founder of the Umbrella Corporation, took over the corporation after killing Dr Marcus. The Umbrella Corporation developed an airborne anti-virus to *T-Virus*, killing every organism infected by the *T-Virus*. He develops a plan to release the *T-virus* and cleansing the world of humanity like Yahweh decided to end all living things through the *Flood* (*Genesis: 6:5*). Many rich and powerful, including the company executives, are stored in cryogenic capsules in the Hive to rebuild the world or *Remake Eden* following the resulting apocalypse. It is not only Sci-fic, but it is also a dream that will come true soon. Robert Ettinger book's "*The Prospect of Immortality*" fleshed out his vision of cryogenics as a bridge to an anticipated Golden Age, when we shall be re-animated to become superman with an indefinite life span. Alcor Corporation, Arizona based life extension foundation, is a world leader in cryonics technology and successfully handling the corpses to build cells, tissues, and organs and repair damaged tissue with future medicine. The advancement in biotech, nanotech, and info-tech will enable the dead to return to full health. Is Covid-19 an experiment like *T-Virus*?

Asrar Alam, a thinker and philosopher, in his seminal work *Marka Dajjal-e-Akbar: Tafqeer, Tadbeer, and Tameel* have categorically mentioned threats bacteriological warfares in the coming world. He specifically mentioned the work of Stanley N. Cohen, Judith Miller, Jonathan B. Trucker, Madeline Drexler, and Richard Preston to get an informed understanding of the threat of biological warfare. Therefore, it seems essential to discuss the main ideas of these work mentioned by him. The book *Germs: Biological Weapons and America's Secret War* is a work of investigative journalism by Judith Miller, Stephen Engelberg, and William Broad, employing biographical and historical narrative to provide context. It describes how humanity has dealt with biological weapons and the dangers of bioterrorism. The authors interviewed hundreds of scientists and senior U.S. officials and reviewed recently declassified documents and reports from the former Soviet Union's bioweapons laboratories. The book opens with an account of the

1984 salmonella poisonings in the Dalles, Oregon, caused by followers of *Bhagwan Shree Rajneesh*, who sprayed salmonella onto salad bars. Other research shows how Russian scientists created an untraceable germ that would induce the body to self-destruct and reveals that the U.S. military planned for germ warfare on Cuba during the 1960s. Three classified U.S. biodefense projects have been detailed out in this book, namely, *Project Bacchus*, *Project Clear Vision*, and *Project Jefferson*. *Germ*s conclude with an assessment of the United States' ability to deter future bio-attack. The tone of the book is somewhat alarmist.

Jonathan B. Tucker's, a leading expert on biological and chemical weapons, book titled "*Scourge: The Once and Future Threat of Smallpox*", published in 2001, provides a definitive smallpox account. He traces the history of the smallpox virus from its first recorded outbreak around 3700 B.C. through its use as the first biological warfare agent in human history and draws some decisively important lessons for the future. *Scourge* is not a story about a virus; however, it is a story about people. Tucker tells of the history of smallpox and civilisations, how political machinations combined with idealism to bring about the global cooperation that removed smallpox from the earth, and the elaborate subterfuge used by the Soviet Union to hide its research on smallpox as a potential biological weapon. Tucker addresses the ever-growing concerns about the proliferation of the deadly smallpox virus and its use by terrorist organisations in a timely debate. He explained how the eradication of the disease in the late 1970s encouraged military research and production of the virus, he exposes the failure of the Russian government to secure its remaining cold-war stockpiles and evaluates the past and present measures undertaken by the United States to counter the existing dangers of a smallpox attack. Ultimately, he passionately argues for strengthening the existing legal ban on the development and possession of biological weapons. Tucker tells the story of those who fought to end the scourge and those who had preserved it as a weapon. He expresses his fears of biological warfare in the coming world.

Richard Preston's book titled "*The Demon in the Freezer*", takes us into the heart of the United States Army Medical Research Institute of Infectious Diseases (USAMRIID), at Fort Detrick, Maryland, once the headquarters of the U.S. biological weapons program and now the epicentre of national biodefense. Peter Jahrling, the top scientist at USAMRIID, a cynical virologist who cut his teeth on Ebola, one of the world's most lethal emerging

viruses, has ORCON security clearance that gives him access to top-secret information on bioweapons. His most urgent priority is to develop a drug that will take on smallpox and win. Smallpox eradicated from the planet in 1979 in one of the great triumphs of modern science, the smallpox virus now resides, officially, in only two high-security freezers-at the Centers for Disease Control in Atlanta and Siberia, at a Russian Virology Institute called VECTOR. However, the demon in the freezer has been set loose. It is almost certain that illegal stocks are in possession of hostile states, including Iraq and North Korea. The thought haunts Jahrling that biologists in secret labs use *genetic engineering to create a new super-pox virus, smallpox resistant to all vaccines*. Preston reports, in unprecedented detail, is based on interviews with top-level FBI agents and with Dr Steven Hatfill. Jahrling is leading a team of scientists doing controversial experiments with the live smallpox virus at the CDC. Preston takes us into the lab where Jahrling is reawakening smallpox and explains, with cool and devastating precision, what may be at stake if his last bold experiment fails.

Secret Agents: The Menace of Emerging Infections, written by Madeline Drexler, a veteran science journalist, delivers a compelling account of today's most ominous infectious disease threats. She focuses on a different danger in each chapter-from the looming risk of lethal influenza to in-depth information on the public health perils posed by bioterrorism. She warns us that the most ceaselessly creative bioterrorist is still *Mother Nature*, whose microbial operatives are all around us, ready to pounce when conditions are right. According to her, a ruthless struggle between man and microbial agents has been going on for our species earliest existence. She gives us both a medical detective story about the actual health dangers to humankind and the history of the battles *Homo sapiens* have fought over the centuries against successive waves of microbial invasion. Drexler educates the reader about the fascinating invasion strategies microbial agents use and the mechanisms that enable them to slip through man's defences and wreak havoc with infection. She describes how groups and individuals constantly rebuild their defences and restore to their advantage the precarious balance of power between them and their invisible cohabitants. In the modern world, a virus once considered exotic can be disseminated around the world within a few days and trigger an epidemic thousands of miles from its natural habitat. The book also deals with the options for bioterrorism in a well-documented and objective

manner. The author stimulates us to consider the fragility of humankind and our planet and highlight definite limits on our activities by Mother Nature.

However, Nature put definite limits on such activity. Is Nature putting a limit on human's act of creating new forms of life through this Covid-19 plague? Is this Covid-19 an alien micro-organism like a microbe that caused a series of ten plagues in Egypt during Prophet Moses? The world intelligentsia is in need to ponder upon these questions to understand this existential crisis. In the year 2019-20, we have witnessed the horror of the wildfire of Amazon and Australia, a plague of locusts that has ravaged through East Africa and the Middle East and now watching the horror of Covid-19 plague across the globe. These events remind us of the famous lines of the book of Revelation, i.e., *Immediately, I saw another horse appear, deathly pale, and its rider was called Death, and Hades followed at its heels. They were given authority over a quarter of the earth to kill by the sword, by famine, by plague and through wild beast* (Revelation 6:8). *Then all the kings of the earth, the governors, and the commanders, the rich people and the men of influence, the whole population, slaves and citizens, hid in caverns and among the rocks of the mountainsthe Great Day of His retribution has come, and who can face it?* (Revelation 6:15-16). Is it the beginning of the end of the world? Is the Covid-19 plague Nature's revenge?

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