



A series of field tests took place under the auspices of the U.S. Biological Laboratories from 1943 to the mid-1960s. In one such test, the cloud of simulant agent was hidden in the exhaust of an outboard boat motor. In another test travelers at Washington National Airport were subjected to a harmless bacterium. Traps were placed throughout the facility to capture the bacterium as it flowed through the air. Laboratory personnel, dressed as travelers carrying brief cases, walked the corridors and sprayed the bacterium into the atmosphere without being detected.

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Demented Strategies

From a military perspective, a cursory examination of the use of germs as a foundation for an effective weapon system may appear to be a good idea. Even a modest study of military history reveals that natural germ exchange at times had the effect of giving an organically robust underwhelming force a tremendous advantage during periods of conquest. The conquest of the Americas is perhaps the most seductive historical precedent capable of inspiring investigation by militaries around the world. The list of diseases introduced into the “New World” with near certainty includes smallpox and measles, and a very high probability exists that typhus, malaria, and venereal diseases should also be included. Among this list, smallpox was the greatest devastator, estimated to have killed millions as a result of the Spanish military invasion of the Americas alone.

As chronicled by the Jesuit missionaries, the Spanish military, in fact, was the first new world force to see how disease could be an ally in their imperial endeavors. The Spanish forces were small in number, but were quite successful in their conquest strategies in part due to the rampant death toll among the natives and the near incapacitation of the remainder of the resistant forces. This is not to say that the Europeans did not have problems of their own due to smallpox epidemics, but their mortality rate was much lower. Having been exposed on a regular basis to smallpox epidemics as well as to numerous other diseases acquired via natural exchanges between the Far East, Near East, North Africa, and Europe itself, the invaders had the distinct advantage of having better adapted immune systems that lowered the death toll among their populations.

In the conquest of northeastern America, the results of smallpox were predictably the same. Seemingly, there was no fatal disease to speak of in the Americas before the arrival of the Europeans, and this was noted by explorers and settlers alike. Then in 1633 an outbreak of smallpox struck New England, first laying waste the Narragansettes and the Connecticuts and then rapidly spreading into the Great Lakes Region and up the St. Lawrence River. By 1634, the Huron Indians located along the shores of Lake Ontario were deeply infected. This epidemic continued until the early 1640s and then remained relatively dormant until the 1660s. The outbreak of 1666 was particularly virulent and killed the colonists at an equally alarming rate, but as usual, it was the natives that continued to pay the heaviest price, due to shrinking populations that doomed societal survival. Cycles such as these continued well into the 18th century, and these natural catastrophes did not go unnoticed by British commanders. Sir Jeffrey Amherst

(the commander of the North American British forces) suggested that smallpox be used to subdue the hostile natives of the Ohio Valley during the French and Indian Wars. When smallpox broke out at Fort Pitt, blankets and a handkerchief from the infected were collected, and on June 24, 1763, they were distributed to the natives by Captain Ecuyer. Smallpox did break out, but whether it was due to the intentional use of germs is difficult to determine, since smallpox was again breaking out all over the colonies and particularly in the Ohio Valley.

In the end, however, the deeper lesson to be learned from this series of events is that the use of germs is not a very good idea. Because of extreme collateral damage, everyone loses. In 1759, the natives gave a particularly virulent strain of smallpox to British troops in South Carolina, who in turn brought it to Charleston, thereby launching an infection rate of 75% among the population. Before long the port cities of Augusta and Savannah were also suffering from the pestilence. Looking back on these events, perhaps the most significant lesson for the military is that the advantage of a strong immune response could be capitalized upon in some way. Vaccines and germs could mean victory, but, and here is the rub, would require an astonishing tolerance for casualties.

This is not the only historical case of the use of such demented strategies. An early and profoundly significant (although potentially flawed) use of intentional germ warfare occurred at the port city of Caffa (now Feodosia, Ukraine) on the Crimean Peninsula. This Genoese colony was quite significant as a gateway to East/West trade and river trade with Russia. It had approximately 50,000 inhabitants. In 1346 an attack-

ing “Tartar”* force (probably the Kipchak army under the subjugation of the Mongols) had this city under siege when plague broke out among its ranks. Knowing that most men died in military campaigns because of disease and that their retreat was in all probability imminent, the Tartars decided to collect their dead and catapult them over the battlements into the city. Plague broke out in Caffa, and victory became a matter of who could withstand this onslaught of disease the longest. The Tartars were victorious and chased the Italians out of the city. The colonists fled by boat to most of the major ports of Italy, and shortly thereafter plague appeared up and down the Italian coast and in Constantinople. By 1347, it was prevalent along the Mediterranean rim, and by 1348 (the standard date for the epidemic) it had spread throughout Europe. So, theoretically, began the second Black Death.

Much as with Captain Ecuyer’s tactical move, we must be cautious assuming that germ warfare won the siege at Caffa, or for that matter started the second Black Death in Europe. It seems reasonable to assume that the Tartars did not understand how plague was passed along. A dead body is not as contagious as a living body. On the other hand, the handling of the corpses by people with open sores or wounds would provide an opportunity for the transmission of plague. Since “mountains of corpses” were thrown into the sea by the defenders, infection could have been passed in this manner. At the same time, while the Tartars may have been unsuccessful at breaching the walls of Caffa, rats with fleas (the primary plague vector) may have done better, so the plague could well have already been in

*This incident was a secondhand account reported by Gabriele de’ Mussi.

the city. Fleas on the corpses are a much less likely source of infection. Plague-carrying fleas would typically desert a dead body and search for a living host; hence, if the bodies were not catapulted right at death or shortly thereafter, it seems unlikely that the method would work as a vector delivery system. Then again, this may have been an attempt to poison the water and torture the defenders with the relentless odor of death and not an attempt to spread plague at all. In the end, we can only say that, as an example of successful germ weaponization and deployment, this is only a plausible scenario.

Be that as it may, let us assume that the Tartars and Captain Ecuyer were successful in these early biowarfare endeavors. Between them, most problems and issues that haunt biowarfare to this day are evident: the boomerang effect, incapacitation vs. destruction of manpower, stealth, and tactical limitations. A few modern concerns are absent, such as first-strike capabilities, weapons use by those without a solid territorial affiliation, or weapons development issues. Nevertheless, the foundation for categorizing such strategies as insane by any standard of utility is readily apparent.

The Boomerang Effect Lite

While the behavior of germs is usually a subject limited to experts, the swift speed by which airborne or waterborne contagion can spread disease is a matter readily revealed by life experience, and fully recognized by the nonspecialized public. Certainly, amateur and expert alike can agree that germs do not discriminate when choosing a host (they are opportunistic) and that they do not respect national or cultural borders. Given these

principles, any power seeking to weaponize these wonders of nature must consider how they can be controlled so as not to infect one's own (i.e., to prevent the germs from "boomeranging" back on friendly populations). While other matters in the weaponization process—such as the storage and distribution of virulent strains—have been optimized, and mass manufacture of virulent strains has been modernized, the issue of control has not fared as well. It seems likely that this is why various militaries have never used these weapons in combat. Given the new global order's increase in mass international travel, global shipping, and commodity exchange, the likelihood of using germ warfare without killing unintended populations is at an all-time low.

Since this problem remains unsolved, one must wonder how the research advanced at such a fast pace. During WWII and the Cold War, when bioweapons development was in full swing, the policy was much the same as that regarding nuclear power. The weapons were not developed to be used, but to deter other nations from using them. A nation showed strength by being able to render swift and devastating in-kind retaliation. For the most part, germs were not considered a first strike weapon.* One need only examine the structure of the tests done with weaponized germs to see that the militaries of the world have been, or are, quite skeptical about successfully using them.

The only recorded field tests are contested, although it seems probable that in October and November 1940 the Japanese made

*During the 1950s the United States flirted with the idea that the use of germs for purposes of incapacitation could be a conventional offensive weapon and not one of mass destruction.

three attempts to air drop plague-contaminated fleas and other assorted materials such as wheat and rice (presumably to attract rats) on towns in China. Each time one of these odd bombing runs were made, plague broke out. The cities struck were Chuhsien, Ningpo, and Kinhwa. None of these cities had the facilities to culture the bacteria that may have been in the fleas, so a direct link between the fleas and the plague outbreaks could not be established with certainty. The casualties were minimal.

The Japanese did try one last field test in October 1941, but after the initial drops, their policy changed, and instead they began testing in labs or in more secluded areas. It is possible that the Japanese were simply unhappy with the results. In interviews conducted by Murray Sanders at the Dai-Ichi building with Ishii Shiro, the head of Japan's biowarfare program, Ishii said that fleas could not be successfully dropped from airplanes. Instead, Ishii went on to experiment with anthrax and anthrax delivery systems—most notably developing a kind of biocluster bomb called the Uji bomb.

One important early successful scientific test of germ weapons was done by the British on Gruinard Island off the coast of Scotland. This is a remote location, to say the least, and was known in the Ministry of Defense as X Base. On July 15, 1942, a thirty-pound bomb loaded with anthrax suspension was dropped from a gal-lows. The test subjects were a herd of sheep, and the purpose of the test was to see how effective an anthrax bomb would be with suitable air currents. The test was for inhalation contamination only. The sheep were placed in crates and their heads placed in canvas hoods so they could not lick any spores off their bodies. Of the fifteen sheep in the herd only two survived—those furthest away from the blast. Blood smears were taken from each of the

dead sheep in order to be sure they had died of anthrax. The test was repeated, resulting in a slightly poorer kill ratio, but this was due to an unexpected shift in wind direction. (This is a good example of how, even under the best conditions, the weapons can function in unexpected ways.) The next test consisted of a bomb dropped from an airplane, which failed because the bomb landed in a peat bog and sank. The experiment was moved to another remote location on the coast of Wales. The bombing was a success, disproving the theory that no anthrax could survive a bomb explosion. While it was estimated that 90% of the anthrax was killed in the explosion, the remaining 10% did provide the desired result, with a 90% mortality rate. However, this result could not be consistently repeated.

In April 1979, the Soviet biowarfare unit Compound 19 at Sverdlovsk (home to a large-scale military weapons manufacturing site and a city of 1.2 million people, now known as Yekaterinaburg) noticed that a neighboring population was experiencing a serious outbreak of anthrax. Soviet émigrés to Germany told local newspapers that the factory had released a cloud of anthrax spores. What actually happened is uncertain. Seemingly, 66 deaths occurred in a 4 km swath downwind from the incident. The United States military and various intelligence corps believed that an anthrax aerosol was accidentally released. Further evidence came from satellite images of roadblocks and what appeared to be decontamination trucks in the area. Later, Soviet doctors who were involved in the event came forward saying that it was an accident and published details of victim autopsies. The official Soviet claim was that the deaths were due to a batch of anthrax-tainted meat that unfortunately was distributed in the town. Whatever the truth may be, the newly elected Reagan administration capitalized on this situation by using it as an example

of why its suggested multi-trillion dollar military buildup should be accepted by government and citizens alike.

The Soviets got more than they bargained for. Not only did they have a public relations disaster, scores of dead citizens, and a contamination that would be quite costly to clean up, but they were also saddled with an intensification of the arms race. They had unwittingly contributed to a paranoid American fantasy engine that in turn led to more spending on useless technology. The boomerang could work on two fronts—not just militarily, but on the collective imagination and ideological order as well.

A Brief Word on Kill Ratios and Tacticality

Another lesson can be learned from all the above examples. The Japanese, the Soviets, and the British agreed on one thing—anthrax is the germ of choice for warfare. Anthrax minimizes the boomerang effect since it cannot be spread from person to person like plague or smallpox. In addition, it can be transformed into “spores.” In this dormant form, it is incredibly resistant to heat, drying, and sunlight, which means it is compatible with missile or bomb deployment systems and can be used for daylight attack. Anthrax is relatively easy to make, and it can be made quite virulent. It appears to be the perfect weapon, but how dependable is its mortality rate? The British experiments indicated an incredibly high kill ratio in the first test; however, this occurred under perfect meteorological conditions in a controlled environment. The failure of the second test, in which wind shifted, is indicative of the weapon’s poor dependability.

The Soviets did not do as well with their accidental test. Only 66 deaths occurred in a heavily populated area in which the inhabitants were completely unaware of the accident. From a military perspective, this number cannot be too impressive. Any other weapon of mass destruction and most conventional weapons would prove more deadly. To the contrary, the World Health Organization claims that 50 kg of *B. anthracis* released in a population center of 500,000 would deliver 95,000 deaths and 125,000 incapacitations (these are the kinds of figures that the military and publicly funded institutions presented to Congress in connection with germ warfare). These numbers could only be derived from a simulation, unlike the Soviet experience with actual field conditions. While the attack could possibly be improved by planned use of meteorological conditions, it remains unlikely that this would radically change the scenario.

Even under optimum conditions, germs are relatively useless as a tactical weapon. Their efficiency is questionable, and they are dependent on unstable conditions such as the weather. The last thing any military person wants is a weapon that needs help from entropic nature to have a chance at performing well. Such a weapon could, on the other hand, be used in ventilation systems where the air currents are more predictable and reliable. The stealth advantage of using tasteless, odorless, invisible germs is worth considering in the indoor scenario; however, why a military would want to employ a weapon of random death that would be limited to a single building is hard to imagine. Only under rare conditions would there be a military advantage, and for terrorists, more profoundly symbolic and terrible ways to kill are just as available. This leaves the subway, where an attack could potentially go on for days before anyone would know (alert to the attack would only come after numerous people

started showing symptoms) and infect who knows how many people. A simulation of a NYC subway anthrax attack done in the 1960s indicated approximately 10,000 deaths would occur if the release were done at rush hour. Perhaps the underground is anthrax's tactical *raison d'être* for those interested in civilian targets. On the other hand, such a weapon would fail to destroy this valuable piece of infrastructure.

Strategic Germ Warfare

For the United States and seemingly for the major military powers of the world, the use of germ warfare, like the use of any weapon of mass destruction, is typically for strategic purposes. They are all used for purposes of deterrence. The theory is that a hostile state recognizes that if any attack with a weapon of mass destruction is perpetrated on the home state or its allies, an increasingly devastating, in-kind reprisal will be the reward. (This is not to say that the United States military has not and is not developing tactical and offensive weapons. It certainly is, but these are weapon systems that it is in no hurry to use.) The function of these weapons is to act as a material grounding for the manufacture of an exchangeable sign of maximum threat. Among major military powers, this sign must indicate that no advantage or reward can be gained by the use of the weapons. Generally, this form of military neutralization is taken to an extreme in the form of a policy of mutually assured destruction. From a greater power to a lesser power, the sign must indicate that use of such weapons will only bring disadvantage, since the power of the greater military is understood to be overwhelmingly superior. And from a lesser power to a greater power, the sign must say that this force is capable of inflicting severe casualties,

so that while this force might be defeated, its enemies will pay a very heavy cost.

CAE now is compelled to ask: From a military perspective, when does strategic deterrence with weapons of mass destruction (WMD) become counterproductive? We believe that even within the logic of the military itself, germ warfare is not useful. Assuming, as the military does, that WMDs are a self-evident aspect of postmodern war and that deterrence is a successful strategy for coping with this element of warfare, what use do germs really have? For major military powers, they would seem to offer very little. They are not very effective field weapons compared to other WMDs (nuclear, chemical, and poison), so they offer no specialized function that any other WMD couldn't provide with more desirable results. Among equals, their only uses are as a modest mutual logistical drain and as a means to create additional threat intensities. These weapons are not something minor powers must concern themselves with developing. Such weapons would not be used against them except as a retaliatory response, making the logistical advantage moot in these situations (i.e., they don't have to keep up with the Joneses since minor powers are not a part of strategic play). Further, since there have been no hot clashes between major powers since World War II, having a variety of WMDs seems to be wasteful and very poor planning for the types of wars that are likely to be fought. Isn't having just one type of WMD (nuclear being the most effective) enough to maintain a deterrence policy? For WMDs, it is only the retaliatory results that matter (mutually assured destruction). Such results only require the most effective weapon systems.

Must a military power respond in kind to a WMD? This seems to be a piece of conventional wisdom that has not been considered for some time. The belief that a state must retaliate with the same WMD has little to do with military efficiency and more to do with response from other states. (Again, any WMD that is effective should do the job.) The fear is that a different WMD will expand the theater of usage and draw condemnation from allies. However, because we have not seen this situation since the world wars, we have no contemporary example of state-against-state use of WMDs to judge this wisdom (with perhaps the exception of defoliant in Vietnam). But if we take WWI as the best historical example, the hope for successful limited use of WMDs once any are used is quite vain (they will all be used), so a retaliating force may as well use what works best.

Returning to the subject of logistical drain, germs are at the bottom of the hierarchy of utility. If the military learned anything during Reagan's military buildup during the Cold War, it is that war must be expensive. (This was a policy suggested by antigerm warfare scientist Matthew S. Meselson while consulting on matters of germ warfare during the Kennedy administration.*)

*Meselson was a Harvard biologist who denounced the use of germ warfare throughout the 1960s to both the Kennedy and Nixon administrations. His pleas were ignored by Kennedy, primarily because too much money had already been invested in the germ warfare program, thus making it difficult to tell the public how useless it was. Meselson consulted for Nixon at the request of former Harvard colleague Henry Kissinger. In 1969 Meselson wrote a paper for the White House on the uselessness of germ warfare. Nixon, unlike Kennedy, listened (although more likely as a means to deflect criticism over his Vietnam policy than due to Meselson's arguments) and began to organize the 1972/75 biological weapons ban treaty.

The more expensive it is to prepare and wage a war, the better. As Paul Virilio has shown in *Pure War*, logistics are the key to a successful postmodern war.

Even for a state that is economically and militarily small, germs are cheap to manufacture, so if there is a desire to go this route, it is possible. The major powers have tried to increase the cost by developing a soft international consensus that disallows minor military powers from having WMDs. This means that minor powers with military ambitions are put in the position of being stealthy enough with WMD programs that no state can prove they have them, but transparent enough that the weapons can be used strategically as a potential threat. However, this added cost does not put the manufacture of military grade germs out of reach. The real problem for a minor power is that a war will in all probability be fought on its own territory (a minor power does not have a global military) and that would be the last place any force would want to spread germs. Since offensive delivery systems are very expensive to manufacture and maintain, no minor power has the means to attack a major power on its home turf other than in very limited forms that only earn them a devastating response. To complicate matters further, if we look at the example of the first Gulf War, the chemical/germ deterrence strategy did not work very well. On the other hand, North Korea chose nuclear weapons as a deterrent and has fared better, judging by the degree of caution that has been shown by capitalist powers. In this case, a “diplomatic solution” appears to be the chosen option. This proven Cold War strategy consists of an effort to bankrupt the enemy state through economic isolation combined with internal economic pressures stemming from the staggering cost of maintaining a standing army. Once this is accomplished, the hope is that

the “rogue” state will come to the bargaining table or that the government will be toppled by friendlier internal forces.

Based on experience, as opposed to nightmare scenarios dreamed up by those who desire a fully militarized state, germ warfare is a waste, a burning excess that in the end does little more than terrorize a nation’s own citizenry. Is it surprising that even the U.S. declared “madman” Saddam Hussein did not use biological weapons (if indeed he had them) during either of the Gulf Wars? Obviously not. For nations and other territorialized groups, biological weapons are more of a burden and a sign of threat that is easily erased.

Bioterrorism

If the thesis is accepted that germ-based weapon systems have a very limited tactical and strategic capacity for nations, and because of this, the probability of them ever being used is quite low, we must ask who would find this poor man’s weapon desirable? The threat makers and fear mongers are very quick to answer that terrorists will want to use them! For most of the groups that one or more nations have labeled as terrorist organizations, the probability of this happening is again very low. The reason is that most of these groups are locked in a territorialized struggle for self-determination in which WMDs are not of any strategic or tactical use. Whether one examines the examples of terrorist organizations in Spain, Northern Ireland, Palestine, Sri Lanka, East Timor, etc., they all share one commonality—that for these struggles to achieve a goal of landed autonomy, they must court positive support from the international community as well as support from the local citizenry. International support is

necessary to pressure the dominant power to negotiate, and if that is successful, to mediate these negotiations, while the local citizenry must be supportive enough (and exhausted enough) to put internal pressure on the government to do what is necessary to resolve the situation. Since the international community has defined the use of WMDs as an intolerable “crime against humanity,” no territorialized resistance movement of self-determination can afford to so deeply offend those they need help from, and worse, essentially give their opponent the opportunity to “justly” respond to their criminal action by whatever means they may choose. It should be remembered these are rational struggles that have clear and possible objectives and only the instruments that serve these objectives will be employed.

But what about the small minority of terrorist organizations that are not territorialized, find transnational solidarity in some type of religious fundamentalism, and have strong eschatological values? From the perspective of pancapitalism, these groups have regard neither for material accumulation nor humanitarian principles, and thereby can only be understood as nonrational forces of negation bent on destruction. Whether this portrait is fair or accurate is another subject, but this representation enjoys a tremendous amount of exchange and convinces the United States authorities that a major attack is “not a matter of if, but when.” In this category of organizations, we can be certain there is one organization willing to cause mass civilian casualties, and that is al Qaeda. We can also be certain the weapons they have used thus far, while odd, are conventional. As for the use of germs in particular, since their fight is transnational, and since potentially a sympathizer has already used them (in the October 2001 anthrax attack in the United States), it is possible that such weapons would be used if they

could acquire them. However, this possibility needs to be put in perspective. Acquisition of the germs on a large scale would be difficult at best, and it is even less likely that the organization could produce them internally given the incredible military pressure it is under. Germ production is neither common among guerrillas roaming the mountains of Pakistan and Afghanistan, nor among sleeper cells trying to maintain deep cover. Could a sympathizer in medical research supply the necessary material? Yes, but only for a small tactical operation. No medical researcher can lay h/er hands on 50 kgs of untraceable anthrax, especially in the United States with its new, ultra-sensitive security measures. A small tactical strike is not very destructive, and in spite of all the hoopla from the only germ attack so far, the casualties were tragic, but minimal. Planes and boxcutters were much more effective.

Germ attacks are too rare to be taken so seriously. In the United States there have only been three other incidents of germ terrorism coming from the nonterritorialized transnational terrorists. Two were from fascist groups. In 1972, members of the Order of the Rising Sun were found in possession of approximately 35 kgs of typhoid bacteria cultures with which they were planning to poison the water supply in Chicago and St. Louis. They were arrested before they could execute the plan. The second incident occurred in 1995, when Larry Wayne Harris of the Aryan Nation attempted to purchase three vials of freeze-dried bubonic plague from American Type Culture Collection. Harris was arrested before he received the vials.

The best known case (besides the anthrax attack) occurred in The Dalles, Oregon when members of the Rajaneeshee cult grew a strain of *Salmonella* and deployed it in restaurant salad bars

around the area. There were approximately 750 incapacitations, 45 hospitalizations, and zero deaths. They purchased the bacteria from American Type Culture Collection for their medical center, so no suspicions were raised, and it was only due to a schism within the power structure of the cult that the plan was revealed. What was particularly odd about this attack was their motivation. They were not bent on destruction but were attempting to rig local elections by incapacitating the citizens who would vote against their candidates.

It appears to CAE that funneling more funds into germ warfare research and extreme overpreparedness when there is only the modest chance of a germ attack is a terrible waste of public funds. These funds would be better used trying to defeat diseases such as malaria and HIV that prematurely end the lives of millions of people every year. The military has consistently shown its ability to embrace waste and uselessness, and even claims that these unconscionable expenditures are a strategic benefit. However, when this is done at the expense of public health, this form of sacrificial economy cannot be allowed to continue. Not since the 1960s has there been significant pressure from citizen groups and scientific professionals to end germ warfare programs. As we shall show in upcoming chapters, we do not need more preparedness, nor are the treaties that supposedly limit these programs actually working. Much as during the Cold War, this moment of hypercapital expenditure in favor of expanding the war machine is as difficult to intervene in as it is to effectively support robust public health and health care for all.

