# 1NC vs Unionville PW

## OFF

### 1NC - OFF

Theory

#### Interp: The aff may only defend the resolution – to clarify, extra t is bad.

Violation: “method to rebel against the reactionary and commodifying forces of capitalism”

1] jurisdiction

2] limits

3] ground - solvency

#### C/I ---

#### Norming --- competing interps finds the best model of debate

#### Reasonability causes a race to the bottom by incentivizing more and more abuse

#### DTD ---

#### Deterrence --- if you lose, you’ll change your strategy

#### It indicts reading the AFF in the first place --- means substance was irreparably skewed, only dropping the debater rectifies this abuse

#### Collapses --- DTA would be rejecting the AFF which is DTD. AFF severance is terrible --- it creates a moving target, and moots 7 minutes of NC offense

#### No RVIs ---

#### Illogical --- you shouldn’t win for proving you didn’t cheat. Logic is a metaconstraint on arguments

#### Theory baiting --- incentivizes abusive AFFs that will just collapse to the RVI

#### Chilling effect --- RVIs allow AFFs to collapse to the RVI, deterring NEGs from checking abuse. O/w --- a. infinite abuse, b. if the shell is frivolous you should be able to beat it

### 1NC - OFF

Util NC

#### The standard is maximizing expected well-being ---

#### Prioritize material, observable effects as the basis for ethics – anything else is epistemically inaccessible

Papinau ’07 (David [David Papineau is an academic philosopher. He works as Professor of Philosophy of Science at King's College London, having previously taught for several years at Cambridge University and been a fellow of Robinson College, Cambridge], “Naturalism”. [http://plato.stanford.edu/entries/naturalism/](http://plato.stanford.edu/entries/naturalism/)) 2007)

Moore took this argument to show that moral facts comprise a distinct species of non-natural fact. However, any such non-naturalist view of morality faces immediate difficulties, deriving ultimately from the kind of causal closure thesis discussed above. If **all physical effects are due to a limited range of natural causes, and if moral facts lie outside this range, then it follow that moral facts can never make any difference to what happens in the physical world** (Harman, 1986). At first sight **this** may seem tolerable (perhaps moral facts indeed don't have any physical effects). But it **has** **very awkward epistemological consequences.** For beings like us, **knowledge of the spatiotemporal world is mediated by physical processes involving our sense organs and cognitive systems. If moral facts cannot influence the physical world, then [we can’t] it is hard to see how we can have any knowledge of them.**

#### Phenomenal experiences prove that pain is intrinsically bad – one cannot understand what pain without associating it with objective disvalue.

Mendola 06 [Joseph Mendola, (Joseph Mendola is professor and chair in the Department of Philosophy at the University of Nebraska–Lincoln. He is the author of Human Thought and of articles on ethics, metaphysics, and philosophy of mind.) "Goodness and Justice: A Consequentialist Moral Theory" Cambridge University Press, 2006, https://www.cambridge.org/core/books/goodness-and-justice/AE25780DC33533E8797FB684C5FBD36E, DOA:6-7-2019 // WWBW]

While this view is of course controversial in our historical situation, in which many hold that sensory experience is as of yellow though there is nothing in the world that is so, not even a sense datum, or at the very least that the yellow we experience is a natural property constituted by physical properties like a certain range of surface spectral reflectance, still the view in question is, as I’ve said, one live competitor. Indeed, it is often motivated by arguments that are structurally similar to the open-question argument: You look at a gold bar and have a certain sort of phenomenal experience. But it seems to some that it might well be an open question whether your physical twin in a physically identical environment has the same phenomenal experience, or any at all. He might be a zombie or a qualia invert. And the openness of that question suggests to some that **the physical cannot constitute** your **phenomenal experience.** At least such qualia dualism is relatively concrete and robust. Even though it involves physically unconstituted qualia, it involves nothing that is non-natural in Moore’s sense. It is at least concretely comprehensible. And that gives it a great advantage over alternative forms of normative realism. That is my main point, that this so far familiar qualia dualism unexpectedly but very plausibly implies a form of normative realism. **Painfulness** – or, more accurately, the phenomenal property present in certain sorts of extreme and paradigmatic physical pain – **is** a kind of **disvalue**. That is my new idea.34 The phenomenal difference between those in bliss and those in agony includes a difference in a sort of felt phenomenal value. **The phenomenal difference between pain and pleasure seems** (at least in part and sometimes) **to be that the phenomenal component of the former is nastier, intrinsically worse than that of the second. The red knight was stabbed to death.** Just as no one can adequately describe what it was like to be him without capturing his sensation of his red and flowing blood and hence the property of phenomenal redness, so no one can describe what it was like to be him without capturing the nasty sensations he felt and hence the property of phenomenal nastiness or disvalue. And **no one can understand what his phenomenal state was without knowing that it was intrinsically bad, worse than pleasure. No one, not even a Martian, can give a complete and adequate characterization of the red knight’s murder while ignoring the phenomenal state that was a part of that situation. And no one, not even a Martian, can give a complete and adequate characterization of that phenomenal state without capturing its nastiness, its intrinsic disvalue.** The red knight’s murder possessed what we might call objective intrinsic disvalue. If someone feels bad, then there is something bad, at least in cases of extreme physical pain. My further claim, to which constitutive naturalists dissent, is that this involves unconstituted but natural disvalue. **Like other phenomenal properties, the disvalue present in agony is unconstituted by physical properties, though it is itself concrete and natural. It is just like phenomenal yellow.** The objective but unconstituted phenomenal component of agony involves a correspondingly objective and unconstituted phenomenal property that is usually present in cases of at least extreme physical pain, a painfulness or “unpleasant hedonic tone”, as it was once called.35 And **such objective phenomenal properties are, at least in part, a sort of intrinsic disvalue or badness.** Something analogous is true of certain paradigmatic physical pleasures. They involve objective intrinsic value.

#### Actor-Specificity—util’s the only theory that assigns culpability to policymakers and allows us to assess policies.

Hirschel-Burns 16—PhD Student in Political Science @ Yale (Danny, In Defense of Consequentialism: A Response to Shadi Hamid," Apr 19, 2016, <https://thewideninglens.wordpress.com/2016/04/19/in-defense-of-consequentialism-a-response-to-shadi-hamid/>)

My difference of opinion is fundamental: I believe most US foreign policy to be short-sighted, and consequentialism, or the weighing of long-term ramifications against the initial intended effect of a particularly intervention to represent the ideal method of policymaking. Policies cannot solely be judged on intention, due to the frequency with which good intentions produce negative outcomes, nor can they be judged solely on initial effects due to the long-running causal chains produced by order-altering things like military interventions. However, Hamid is right that it is impossible to foresee some ramifications (even if we can see general correlations) of foreign policy, but he doesn’t apply that standard of doubt consistently across his analysis. Early in the essay, Hamid makes the point that to evaluate the Libyan intervention, it is necessary to compare the current situation with the counterfactual: what would Libya look like if the US hadn’t intervened. In general, the assertion is correct, but the practice of counterfactuals is tricky. Hamid’s analysis of where the Libyan conflict was at when the US intervened is enlightening, but his conclusion that Libya would likely look like Syria today had the US not intervened is highly questionable. Political prediction, especially on rare events like mass atrocities or civil wars, is really, really hard. And when you consider all the differences between Libya and Syria (total population, population density, salience of sectarian divides, regime configuration, military capability of opposition, etc.) along with all contingencies that could have occurred in the past four years, it is impossible to say with any certainty that Libya would bear a resemblance to Syria. Syria is merely a convenient standard of comparison because it’s an ongoing civil war in the Middle East, but saying Libya would be Syria doesn’t actually tell us that much about Libya or the effects of intervention. It’s not that the intervention can’t be justified with counterfactuals, but they need to be more carefully constructed. The central thrust of Hamid’s essay is to deride what he calls consequentialism, or evaluating the efficacy of foreign policy based on events years after the initial intervention in the target location. For Hamid, such an approach is particularly problematic because it a policy cannot be retroactively deemed a mistake if the limited goal of the intervention is achieved initially. Therefore consequentialism creates an impossibly high bar for foreign policy decisions: unless a foreign policy results in a peaceful, liberal democracy, than it’s a failure. This is, however, a major straw man. Certainly there are some critics that would deem the Libyan intervention a failure based on this standard, but Hamid lumps in those with reasonable concerns that a civil war (likely to continue for many years based on what we know about civil wars and foreign intervention) at least partially produced by the NATO intervention will have more negative long-term effects on Libyans than Gaddafi’s intended repression. Worrying about consequences does not preclude making foreign policy decisions. Recognizing that every decision has potential positive and negative effects is no more than an accurate framework for analyzing policy. There are an additional two problems with Hamid’s argument here. First, the dismissal of consequentialism is one of the central dynamics that leads Western policymakers to struggle with conflict prevention. Short-term thinking produces short-term solutions. Policymakers become trapped in a vicious circle of continual crises that overwhelm them and prevent longer-term thinking that could go a long way in preventing violence. Second, Hamid’s insistence that the initial moral righteousness of an intervention negates any negative effects, is deeply problematic. As many before me have argued, focusing only on moral imperatives disincentives careful planning and allows policymakers to wash their hands of responsibility if the situation starts to go south. Evaluating military interventions isn’t personal morality, because very rarely can doing the right thing in your personal life lead to deaths of thousands of people. Afghanistan is a valid example. The United States was going after the Taliban in response to 9/11 initially, but the war has had disastrous long-term effects for the country. It would take quite a bit of chutzpah to declare it a success. Moral arguments without strategic and humanitarian (writ large) considerations are also prone to abuse, because liberal interventionists and neoconservatives aren’t actually that far apart: both believe in the wisdom of Western democracies to improve the world through military force. Without more consequentialist standards, there’s not a clear line the prevents Iraq-like decisions. So Hamid’s own argument that Obama being right about Iraq decreases his likelihood he’ll be right about other situations is undermined by a lack of a standard that allows leaders to tell the difference between the two.

### 1NC - OFF

CRISPR PIC

#### CP: The member nations of the World Trade Organization ought to reduce intellectual property protection on medicines except for CRISPR.

#### Uncertainty about licensing ensures CRISPR is not distributed or developed – small firms don’t know where they need to seek approval from

Sterlin 20 [(Ian, JD from the University of Michigan Law School, Executive Editor of the Michigan Technology Law Review) “The CRISPR War Drags On: How the Fight to Patent CRISPR-Cas9 Creates Uncertainty in the Biotechnology Sphere,” Michigan Technology Law Review, 3/2020] JL

On September 10, 2018, the Federal Circuit Court of Appeals (“Federal Circuit”) affirmed the ruling of the United States Patent Trial and Appeals Board (“the Board”) in *Regents of the University of California v. Broad Institute*, finding that there was no interference-in-fact between competing patents that claimed methods of using CRISPR-Cas9 to modify cellular DNA. Rather than settling the patentability issue, however, exhaustive litigation has continued, as both parties seek to protect the results obtained from costly research. Such protracted litigation has created significant uncertainty among members of the scientific, legal, and biotechnology communities as to the exact demarcation of patent ownership and may ultimately reduce the amount of innovation in CRISPR-based technologies and stifle developing industries.

Clustered Regularly Interspaced Short Palindromic Repeats (“CRISPR”) are a family of DNA sequences found naturally in bacteria that, when paired with guiding RNA sequences and CRISPR-associated proteins (Cas), can selectively modify an organism’s genetic material (genome) more effectively and cheaply than comparable gene-editing systems. Since the discovery of CRISPR’s gene-editing capacity by researchers at the University of California, the University of Vienna, and Emmanuelle Charpentier, innovators have applied CRISPR technology in diverse industries, including the medical, industrial, and agricultural sectors. Several thousand CRISPR-related patent applications have already been filed worldwide, with the majority being filed in the United States, China, and Europe.

Researchers at the University of California were the first to (“UC”) demonstrate that isolated CRISPR-Cas9 components could effectively function in an *in vitro* environment. UC subsequently filed a patent application in May 2012 broadly claiming a method to using CRISPR-Cas9 without referencing specific cellular environments. In December 2012, a research team led by Feng Zhang at the Broad Institute filed a patent application directed to a method of using CRISPR-Cas9 in mammal cells. UC unsuccessfully sought to invalidate Dr. Zhang’s patents in an interference proceeding in front of the Board. UC appealed the Board’s ruling to the Federal Circuit, arguing that the Board employed an improperly rigid obviousness test and that it erred in dismissing evidence that other researchers simultaneously applied CRISPR-Cas9 to non-bacterial (eukaryotic).

The Federal Circuit rejected UC’s arguments and affirmed the Board’s finding that substantial evidence indicated there was no reasonable expectation of success a person of ordinary skill in the relevant art (POSITA) could successfully apply CRISPR-Cas9 to eukaryotic genomes. The Federal Circuit approved of the wide range of evidence the Board used to make its determination, including expert testimony, evidence of past failures in the field, simultaneous invention, and statements by members of UC’s research team expressing doubt that CRISPR-Cas9 could be successfully implemented in eukaryotic systems. The Federal Circuit also rejected UC’s contention that evidence of simultaneous evidence alone sufficiently demonstrated an invention’s obviousness. While the fact that six independent research teams successfully applied CRISPR-Cas9 within months of its disclosure by UC was useful evidence in determining obviousness, the weight of such evidence must “be carefully considered in light of all the circumstances.”

It is unclear what the Federal Circuit’s decision means for the non-obviousness standard of CRISPR-related patents. Some observers have praised the ruling as affirming the Board’s comprehensive analysis of available factual evidence while noting that some evidence existed that could support a finding of obviousness. While the Federal Circuit rejected UC’s argument that simultaneous invention alone could not demonstrate a showing of obviousness, it was careful to state that such evidence had not demonstrated “a reasonable expectation of success given the ‘specific context of the art at the time.” This may suggest that evidence of simultaneous invention may gain greater significance in future decisions as advances are made in CRISPR technology. The Federal Circuit further clarified that its ruling determined that the competing sets of patent claims comprised distinct subject matter and did not rule on the validity of either parties’ claims.

The Federal Circuit’s holding has also generated a heated discussion outside of the legal field. Many members of the scientific community have criticized the decision, with some indicating that they believe the Board’s factual determination does not reflect the practices found within the field of molecular biology. The uncertainty resulting from the Federal Circuit’s decision is also reflected in the confusion among third party innovators regarding who they should seek a license from in order to commercially exploit existing CRISPR patents. This confusion is further compounded by the fact that the “surrogate companies” the Broad Institute and UC have created to manage the licensing of their patents grant differing levels of exclusivity when licensing their patents.

Further complicating the determination of patent rights in the foundational CRISPR-Cas9 patent is a lack of uniformity among the various national (and multinational) patent offices. Even before the Federal Circuit’s ruling, China’s State Intellectual Property Office (now renamed National Intellectual Property Administration or CNIPA) granted UC a patent for its CRISPR technology, and the European Patent Office (EPO) granted UC a patent for use CRISPR-Cas9 in both prokaryotic and eukaryotic organisms. The EPO subsequently rescinded a patent grant it had issued to the Broad Institute in 2015, finding that the prior art from UC’s patent demonstrated a lack of novelty for the invention. On January 17, 2020, the EPO’s Board of Appeal dismissed the Broad Institute’s appeal against the rescission, and in February, the Board of Appeal rejected the Broad Institute’s opposition proceeding against UC’s patent. Rather than creating a clear standard within Europe, however, the EPO’s rulings have resulted in greater uncertainty, with both the Broad Institute and UC, as well as other patentholders, having overlapping patent rights that may result in further litigation. In addition, several of the Broad Institute’s EPO patents for CRISPR remain valid and the CNIPA has granted three patents to the Broad Institute for CRISPR technologies.

Perhaps the most worrying development has been the renewal of UC and the Broad Institute’s legal battle in the United States. In June 2019, the Board filed documents to commence interference proceedings between the Broad Institute and UC’s patents that will address the question of priority. These new interference proceedings, which will examine who first invented the use of CRISPR-Cas9 in eukaryotic organisms, have already begun with both parties accusing the other of engaging in questionable legal conduct. Although some observers are optimistic that the new interference proceedings may induce the parties to reach a settlement, it is equally possible that the proceedings may result in a protracted legal battle and another appeal to the Federal Circuit. The protracted legal battles surrounding the UC and the Broad Institute’s CRISPR patents have created significant uncertainty as to the final determination of ownership and patentability. What is certain, however, is the need for greater clarity in patent rights in order to make researchers feel secure in developing further technological innovations using CRISPR-.

#### That’s good --- diffusion of CRISPR enables bioterror attacks --- new tech overcomes all barriers AND it will be incurable

Miller 16 (Drew Miller is a former intelligence officer, former senior executive service member in the Office of the Secretary of Defense, and retired Air Force Reserve Colonel. He holds a Ph.D. from Harvard University and currently serves as director of Advanced Analysis Applications. “The Age of Designer Plagues”. September 20, 2016. <https://www.the-american-interest.com/2016/09/20/the-age-of-designer-plagues/>)

The world is likely entering the age of bioengineered viral pandemics and collapse—BVPC for short. New technologies like bioengineering enable terrorist groups, or even one dedicated individual, to modify and release new viruses that could cause both a pandemic and, as people react, a likely collapse in economic activity and possibly even of law and order. Many experts say natural or bioengineered viral pandemics (BVP) are inevitable as it becomes increasingly easier to modify an existing pathogen, making it more lethal and transmissible. Should there be a deliberately loosed pandemic, revolutionary changes will flood our economy, military, foreign policy; we will not live as before during the Age of Bioengineered Viral Pandemics and Collapse. This bleak Age may be unavoidable, but we can prepare ourselves to minimize its dangers. Yet the specter of biological attack, especially by hard-to-identity and hold-to-account (let alone deter) non-state actors, is little addressed by the media or even inside the U.S. government. Nuclear terrorism we fear and try to deal with, no doubt because we have mental images of nuclear weapons going off to provide a sense of dark possibility. But we seem to suffer from a near total failure of imagination when it comes to bioterrorism, even though for a host of technical and other reasons—simpler engineering, much lower cost, quicker critical mass generation, smaller cadre of workers, smaller facilities for concealment purposes and ordnance delivery—it would be vastly easier for bad non-state actors to master a bio-attack than a nuclear one. We need to overcome that failure of imagination. In December 2011 national media reported that scientists had created a deadly virus with 60 percent lethality. Since then, new “CRISPR” technology makes it much easier to manipulate DNA—with kits as cheap as $130 available. Genetic engineering, or bioengineering, is the manipulation of an organism’s genetic material. Scientists have been creating genetically modified organisms (GMO) since the 1970s, and in 2010 the first synthetic new life form was created. Genetic modifications are common in nature—that’s why we continuously get new strains of flu and have had viral pandemics (like the 1918 Spanish Flu) on account of some of them. Now it is possible to accelerate genetic change, creating viruses and bacteria that never existed. With newer techniques, a simple, cheap lab (perhaps in a neighbor’s garage) can generate millions of recombinants in minutes. Through bioengineering a lone terrorist or a Revolutionary Guards lab in Iran can intentionally create a human-to-human transmissible version of avian flu, or modify a lethal virus to have a longer latency period, which would facilitate its undetected spread. While biotechnology promises great new treatments and advances in medicine, it will also likely be used to design such deadly new viruses. It is too late to stop the spread of this technology and its misuse. We have been so cavalier about this mounting problem that we have never bothered to assemble a national or a global data base so that we have some sense of what kind of experimentation is going on for what purposes and under whose aegis. The only good news is that well-prepared people and nations should be able to survive and adapt. As Tara O’Toole, former director of Johns Hopkins University Center for Civilian Biodefense Strategies, warned in congressional testimony: “We are in the midst of a bioscientific revolution that will make building and using biological weapons even more deadly and increasingly easy.”1 The Director of National Intelligence has added bioengineering technology like CRISPR to the list of mass-destruction threats. If a lone terrorist or lunatic launches the virus, it may not spread far before we detect it and limit the devastation. But if an enemy nation spreads a bioengineered virus with high lethality and transmissibility, plus a long period when carriers are contagious but not suffering from the illness or symptoms, it might kill hundreds of millions. This scenario could leave survivors in a radically disrupted social, political, economic, and security environment for years. A bioengineered virus, launched in our crowded, interconnected world by an enemy working to spread it widely before it is detected, could yield a more devastating pandemic than anything experienced in the past. Smallpox killed as many as 90 percent of the Aztecs, Mayans, and Incas during the European conquest of the New World, and it killed 500 million people in the 20th century. A smallpox outbreak could be even worse now, since our immunity has expired and our populations are far more vulnerable.A smallpox outbreak could be even worse now, since our immunity has expired and our populations are far more vulnerable. For example, Stanford Professor Dr. Nathan Wolfe warns that, “if terrorists ever got their hands on one of the few remaining vials of smallpox, the results would be devastating.”2 Smallpox has been found in recent years in laboratories, and its genetic code has been posted on the internet. Eckard Wimmer, who headed the team of researchers at SUNY Stonybrook that made live polio virus from scratch as part of a Defense Department project to prove the threat of synthetic bioweapons, said that any one of thousands of members of the American Society for Virology could figure out how to do the same. Rob Carlson, a physicist-turned-biologist, like many others in the biotech field, warned that developing lethal viruses is increasingly cheap and easy. There is no need for a national program, a big lab, expensive equipment or specialized expertise. With a human-to-human transmissible virus there is no need for difficult weaponization efforts—the malefactor could readily find a simple means of infecting people in crowded public transportation centers and let them spread the virus. A virus released in multiple airports would reach every city and probably most small towns in the United States within a few days. Moreover, if the virus is genetically modified, the limited supply of vaccines we have for smallpox may not even work. If smallpox is too difficult to obtain or synthetically create, someone can use a deadly virus like Ebola or avian flu—viruses still active in areas of the world. Donald Henderson and other scientists, writing in an article on biosecurity, warned that H5N1 avian influenza kills about 60 percent of its victims, compared to just 2 percent for the 1918 Spanish flu pandemic, which killed about fifty million: Like all influenza strains, H5N1 is constantly evolving in nature. But thankfully, this deadly virus does not now spread readily through the air from person to person. If it evolved to become as transmissible as normal flu and results in a pandemic, it could cause billions of illnesses and deaths around the world.” In 2011, Ron Fouchier of the Erasmus Medical Center in Rotterdam turned the H5N1 virus into a possible human-to-human flu by infecting ferrets repeatedly until a form of H5N1 that could spread through the air from one mammal to another resulted. This was not high-tech bioengineering, but simply swabbing the noses of the infected ferrets and using the gathered viruses to infect another round. A team of scientists at China’s National Avian Influenza Reference Laboratory combined H5N1 with genetic attributes found in dozens of other types of flu. Some of their “man-made super-flu strains” could spread through the air between guinea pigs, killing them. This was condemned by scientists around the world as “appalling irresponsibility” since the new viral strains created by mixing bird-flu virus with human influenza could escape from the laboratory and cause a global pandemic—killing millions of people. With researchers tampering with H5N1 to make it human-to-human transmissible, we should not be surprised if terrorists and some state regimes are doing so as well. The Soviet Union’s biological warfare program, with far less sophisticated equipment and knowledge than we have today, produced a host of biowarfare agents. This effort included 65,000 researchers in a vast network of secret laboratories, each focused on a different deadly agent. They produced traditional biological weapons and may have successfully combined smallpox, Marburg, Ebola, and other viruses. If someone could combine the 90-percent-lethal Ebola virus with highly contagious smallpox, one might indeed create an existential BVP. A former leader of the Soviet biowarfare program believes his colleagues still work in Russia and many other nations, and predicts that bioweapons “in the coming years will become very much a part of our lives.”4 BVP will come not only from accidents in professional labs, but also from do-it-yourself (DIY) biologists in their garages or basements. In 2001 Australian researchers attempting to make a contraceptive vaccine for pest control inserted a “good” gene into mousepox virus and accidentally created a lethal new virus that resisted vaccination. Other legitimate lab accidents have likely occurred, but were not publicized. We shudder to imagine what do-it-yourself biologists and biohackers are doing. There are more than 2,000 members of a website called DIY Bio. Some work alone at home, others in small rent-a-lab spaces around the world Advances in DNA-manipulation technology, cheap lab equipment, and information posted on the internet enable a single person to make artificial smallpox or worse. With “professional” scientists in controlled labs accidentally making human-transmissible forms of highly lethal avian flu and publishing the instructions, we must expect that DIY bio folks in their garage, biohackers, lunatics, terrorists, or countries like Iran and North Korea will either accidentally or intentionally unleash a BVP. If the first bioengineered virus comes from an accident or is unleashed by one madman it may fail to spread to pandemic status. A worse threat is North Korea, Iran, or a terrorist group bioengineering a virus they release against us in multiple locations, perhaps after they’ve developed a vaccine to protect themselves. For new, bioengineered viruses, however, there likely will be no immunity or treatment available. So if a state were to task even a small lab to develop a GMO with the “cubed” power of high lethality, high transmissibility, and long latency period, along with a vaccine for the state’s use only, this state could have the capability to destroy many enemies. Delivered “correctly,” the devastated population would not even know whom to blame for the attack. It may seem irrational for a state to unleash a contagious agent. But it’s more understandable given the ability to launch the attack secretly, without any identification of responsibility. One could foresee many cases, none of which is as irrational, say, as the world going to war after a terrorist assassinated the archduke of a declining state in August 1914. While we cannot forecast the odds of a BVP, a host of experts believes it is inevitable. A National Defense University study of the GMO threat found that “the tools and information required for genetic modification of microorganisms are readily available worldwide.” They are also very cheap, and “the work can be successfully accomplished by a small cadre [of three people].” This study estimated that the materials and facilities to weaponize a bioagent would cost about $250,000. “Compared to other projects that might be undertaken by governments or private organizations, the cost of equipping and staffing a laboratory scale bioprocessing facility is trivial.” They concluded that “the potential for corruption of biotechnology to catastrophic malevolent use is considerable,” with “tangible opportunities for many potential adversaries to acquire, modify, and then manufacture to scale a potential GMO pathogen.”5 A BVP or other triggering disaster need not be all that effective in killing infected victims to generate a collapse that kills additional people and destroys the nation’s strength. “Collapse” is defined here as a cessation of most economic activity and the widespread lack of law and order, for a prolonged period of time, with very high fatalities (millions, more than 10 percent of the population). Indeed, GMOs pose an “existential threat,” meaning a risk not just of killing millions of people, but potentially billions, wiping out civilization as we know it. An existential threat is defined here as one that could kill most of the population (more than 90 percent), causing a collapse that lasts beyond a few years, with the level of pre-collapse civilization not returning for generations. Despite a largely rural population and relatively little international travel, the bubonic plague wiped out about a third of Europe’s population in the mid-14th century. Today, over half of the world’s seven billion people live in cities visited daily by international travelers. We are more urbanized and densely packed, sustained by food and water that arrives from distant locations, relying on delivery systems and economic operations that may shut down if there is a lethal contagious virus spreading and people understandably do not report to work. Even those with the courage to face the risk may change their mind when they realize they could bring a fatal virus home to their families.