## DA

**US Defense companies are increasing investment in innovation now but now is not the time to lower.**

**Global data 10/7**.Author at Army Technology published on 7 October 2020 [https://www.army-technology.com/comment/us-dod-ai/] // ahs emi

A recent report from the Future Defense Task Force, **a bipartisan congressional panel, has reiterated the need for the US to invest more heavily in AI. While the US has increased spending in this area** in recent years this report reflects the growing belief within US military circles that **spending** on advanced technologies **is still** far **lower than it needs to be** to address future conflict scenarios. William Davies, Associate Aerospace and Defense analyst at GlobalData comments: “Despite new organisations such as the Joint Artificial Intelligence Center (JAIC) providing an increased focus on AI **the US** is still lacking in technological readiness and **must focus on** transformative solutions rather than single use efforts, as well as **creating a common AI foundation** and developing a leading workforce – points the DoD themselves outlined in their 2020 strategy document. Additionally, there will also need to be further integration with major defence programmes, and a more concerted approach for advanced technologies.” Generating AI capability requires defence actors to work significantly more with the private sector. Current leaders in this space include companies such as Google, Microsoft, and Amazon. The DoD has previously had problems working with technology companies because of internal resistance to DoD goals, with Google opting in 2019 not to renew their contract for Project Maven due to employee pushback. Along with the larger established private sector companies however, the US also needs to engage with, and specifically develop, an ecosystem of small and medium sized (SME) companies and start ups. Recognising this need, **the report suggests raising the funding** ten-fold for efforts to corral private sector expertise through initiatives like the Defense Innovation Unit. Davies continues, “**The US must pursue more serious integration with current and future defence programmes and consider the applications of AI in all areas of defence including logistics and cyber operations, and in particular the development of semiautonomous and autonomous vehicles.** However, **other major powers** such as China and Russia **are** also **investing heavily in this area.** Moreover, China aiming to be a world leader and bring the domestic value of its AI industry to $150bn by 2030.”

**Unionization and improved bargaining power destroys innovation**

**Bradley et al. 15** (Daniel\* Incheol Kim\*\*, Xuan Tian\*\*\*, last revisited August 24th 2015,, \*professor of the Muma College of Business Finance Department and holds the Lykes Chair in Finance and Sustainability at the University of South Florida, \*\*University of Texas - Rio Grande Valley - College of Business and Entrepreneurship, \*\*\*Tsinghua University - PBC School of Finance, “Do Unions Affect Innovation?,” [https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2232351) //RTF](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2232351)%20//RTF) /// recut swickle

In this paper, we examine the effect of unionization on the innovation activities of firms. We find patent counts and citations decline significantly after firms elect to unionize. Economically, passing a union election leads to an 8.7% decline in patent counts and a 12.5% decline in the number of citations per patent three years after the election. We provide a battery of diagnostic and robustness tests and find our conclusions are unchanged. Next, we show that the results are statistically insignificant in states with right-to-work legislation where unions have less bargaining power to expropriate rents. A reduction in R&D expenditures, reduced productivity of existing and newly hired inventors, and the departure of innovative individuals appear plausible underlying mechanisms through which unionization impedes innovation. Finally, in response to unionization, we find that firms move their innovation activities away from states where union elections win. While we show a negative effect of unions on innovation using the regression discontinuity approach, one needs to use caution when interpreting and generalizing our results because of some limitations of the RDD. First, while RDD has strong local validity, it has weak external validity. Therefore, the negative effect of unions on innovation may only apply to firms that fall in a narrow band of vote shares around the cutoff. For firms in which unions overwhelmingly win or lose the elections, we cannot establish the effect of unionization on innovation. Second, there might be a selection issue for firms that choose to hold or not hold union elections. Because our focus is on the firms that hold union elections and explore how barely passing or failing the election affects firm innovation, our setting is not subject to this selection problem. However, our findings cannot answer the question of whether holding a union election would affect innovation. Third, the political science literature (e.g., Snyder, 2005; Caughey and Sekhon, 2011) has shown that substantial imbalance near the threshold that distinguishes winners from losers may create “strategic sorting” around the election threshold and bias the results. In other words, some firm observable attributes appear to be significantly correlated with victory even in very close elections. While we have shown that this is not the case in our setting because ex-ante characteristics of publicly-traded firms that barely pass and fail the union elections are comparable, we cannot completely rule out the possibility that our results are driven by strategic sorting because we do not observe attributes of privately-held firms falling in the small margin around the cutoff due to data limitations. Our study has important implications for policy makers when they alter union regulations or labor laws to encourage innovation, which is perhaps the most important driver of economic growth. Our paper also highlights the importance of blue collar workers in the innovation process, which has been generally ignored by the previous literature but has received more interest and attention as of late. Finally, while a fast growing literature has provided empirical evidence supporting the implications of Manso (2011) that tolerance for failure is necessary for motivating innovation (e.g., Bernstein, 2015; Ederer and Manso, 2013; Tian and Wang, 2014), our paper shows that one cannot ignore the importance of the other side of the story, namely, that agents need to be rewarded for success in the long run. Labor unions are a good example of contract arrangements that tolerate failure in the short term but do not reward success in the long run, and hence impede innovation. Our research calls for future studies that explore contract designs that combine both short-term failure tolerance and long-term reward for success and best nurture firm innovation.

**A strong defense base supports nuclear deterrence**

**Heritage 18 - The Heritage Foundation, Oct 4, 2018** “U.S. Nuclear Weapons Capability” [https://www.heritage.org/military-strength/assessment-us-military-power/us-nuclear-weapons-capability] Accessed 3/15/19 SAO

In addition to these government sites, the defense industrial base supports the development and maintenance of American delivery platforms. These complexes design, develop, test, and produce the weapons in the U.S. nuclear arsenal, and their maintenance is of critical importance. As the 2018 NPR states: An effective, responsive, and resilient nuclear weapons infrastructure is essential to the U.S. capacity to adapt flexibly to shifting requirements. Such an infrastructure offers tangible evidence to both allies and potential adversaries of U.S. nuclear weapons capabilities and thus contributes to deterrence, assurance, and hedging against adverse developments. It also discourages adversary interest in arms competition.29 A flexible and resilient infrastructure is an essential hedge in the event that components fail or the U.S. is surprised by the nuclear weapon capabilities of potential adversaries. U.S. research and development efforts and the industrial base that supports modernization of delivery systems and warheads are important parts of this indicator. Maintaining a safe, secure, effective, and reliable nuclear stockpile requires modern facilities, technical expertise, and tools both to repair any malfunctions quickly, safely, and securely and to produce new nuclear weapons if required. The existing nuclear weapons complex, however, is not fully functional. The U.S. cannot produce more than a few new plutonium pits (one of the core components of nuclear warheads) per year; there are limits on the ability to conduct life-extension programs; and Dr. John S. Foster, Jr., former director of the Lawrence Livermore National Laboratory, has reported that the U.S. no longer can “serially produce many crucial components of our nuclear weapons.”30

**Nuke war causes mass extinction.**

**Ward 18 - Alex Ward, Vox, updated December 26th, 2018** “This is exactly how a nuclear war would kill you” [https://www.vox.com/future-perfect/2018/10/19/17873822/nuclear-war-weapons-bombs-how-kill] Accessed 2/26/19 SAO

The theory around whether someone might drop a nuclear bomb takes away from the most serious matter in these discussions: the human and physical toll. Simply put, a nuclear strike of any magnitude would unleash suffering on a scale not seen since World War II. And with the advances in nuclear technology since then, it’s possible the devastation of the next nuclear strike would be far, far worse. It’s hard to picture what the effect of a modern-day nuclear attack would actually look like. But Wellerstein, the nuclear historian, created a website called Nukemap that allows users to “drop” a specific bomb — say, the roughly 140-kiloton explosive North Korea tested in September 2017 — on any target. So I did just that, detonating that North Korean device on the Capitol building in the heart of Washington, DC — and, well, see for yourself: Roughly 220,000 people would die from this one attack alone, according to the Nukemap estimate, while another 450,000 would sustain injuries. By comparison, America’s two nuclear attacks on Japan in 1945 killed and injured a total of around 200,000 people (granted, Hiroshima and Nagasaki had smaller populations than the Washington metro area). It’s very likely that North Korea wouldn’t launch just one bomb, but multiple at DC and likely some at New York City, the West Coast, and possibly US military bases in Guam and/or Hawaii. But for simplicity’s sake, let’s focus on the effects of this one horrible attack. The center yellow circle is the fireball radius — that is, the mushroom cloud — which would extend out about 0.25 square miles. Those within the green circle, approximately a 1.2-square-mile area, would face the heaviest dose of radiation. “Without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks,” according to the website. Radiation poisoning is a horrible way to die. Here are just some of the symptoms people sick with radiation get: Nausea and vomiting Spontaneous bleeding Diarrhea, sometimes bloody Severely burnt skin that may peel off The dark grey circle in the middle is where a shock wave does a lot of damage. In that 17-square-mile area, the bomb would flatten residential buildings, certainly killing people in or near them. Debris and fire would be everywhere. People in the bigger yellow circle, a 33.5-square-mile area, would receive third-degree burns. “There’s a bright flash of light,” Brian Toon, a scientist and expert on nuclear disasters at the University of Colorado Boulder, told me about when the bomb goes off. Those exposed to the light, which would stretch for miles, would get those burns if their skin were exposed. The light would also “easily ignite fires with flammable objects like leaves, twigs, paper, or your clothing,” he added. The victims may not feel much pain, however, because the burn will destroy pain nerves. Still, some will suffer major scarring or have the inability to use certain limbs, and others might require amputation, according to Wellerstein’s site. The biggest circle encompasses the near entirety of the air-blast zone: a 134-square-mile area. People can still die, or at least receive severe injuries, in that location. The blast would break windows, and those standing near the glass might be killed by shards, or at least shed blood from myriad cuts. Those who survive the bombing and its effects will have to walk through burning rubble and pass lifeless, charred bodies to reach safety. Some of them will ultimately survive, but others will succumb to sustained injuries or radiation. The wind, meanwhile, will carry the irradiated debris and objects — known as fallout because they drop from the sky — far outside the blast zone and sicken countless others. As for Washington, it will likely take decades and billions of dollars not only to rebuild the city but clean it of radiation entirely. It’s worth reiterating that all of the above are estimates for one strike on one location. An actual nuclear war would have much wider and more devastating consequences. And if that war spiraled out of control, the effects after the conflict would be much worse than the attacks themselves — and change the course of human history. “Almost everybody on the planet would die” It’s possible you have an idea of what a post-nuclear hellscape looks like. After all, disaster movies are obsessed with that kind of world. But scientists and other nuclear experts care deeply about this issue too — and their research shows the movies may be too optimistic. Alan Robock, an environmental sciences professor at Rutgers University, has spent decades trying to understand what a nuclear war would do to the planet. The sum of his work, along with other colleagues’, is based on economic, scientific, and agricultural models. Here’s what he found: The most devastating long-term effects of a nuclear war actually come down to the black smoke, along with the dust and particulates in the air, that attacks produce. In a nuclear war, cities and industrial areas would be targeted, thereby producing tons of smoke as they burn. Some of that smoke would make it into the stratosphere — above the weather — where it would stay for years because there’s no rain to wash it out. That smoke would expand around the world as it heats up, blocking out sunlight over much of Earth. As a result, the world would experience colder temperatures and less precipitation, depleting much of the globe’s agricultural output. That, potentially, would lead to widespread famine in a matter of years. The impact on the world, however, depends on the amount of rising smoke. While scientists’ models and estimates vary, it’s believed that around 5 million to 50 millions tons of black smoke could lead to a so-called “nuclear autumn,” while 50 million to 150 millions tons of black smoke might plunge the world into a “nuclear winter.” If the latter scenario came to pass, Robock told me, “almost everybody on the planet would die.”

**Extinction outweighs –**

**a] Moral Uncertainty and Magnitude –**

**Pummer 15** [Theron, Junior Research Fellow in Philosophy at St. Anne's College, University of Oxford. “Moral Agreement on Saving the World” Practical Ethics, University of Oxford. May 18, 2015] AT

There appears to be lot of disagreement in moral philosophy. Whether these many apparent disagreements are deep and irresolvable, I believe there is at least one thing it is reasonable to agree on right now, whatever general moral view we adopt: that it is very important to reduce the risk that all intelligent beings on this planet are eliminated by an enormous catastrophe, such as a nuclear war. How we might in fact try to reduce such existential risks is discussed elsewhere. My claim here is only that we – whether we’re consequentialists, deontologists, or virtue ethicists – should all agree that we should try to save the world. According to consequentialism, we should maximize the good, where this is taken to be the goodness, from an impartial perspective, of outcomes. Clearly one thing that makes an outcome good is that the people in it are doing well. There is little disagreement here. If the happiness or well-being of possible future people is just as important as that of people who already exist, and if they would have good lives, it is not hard to see how reducing existential risk is easily the most important thing in the whole world. This is for the familiar reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. There are so many possible future people that reducing existential risk is arguably the most important thing in the world, even if the well-being of these possible people were given only 0.001% as much weight as that of existing people. Even on a wholly person-affecting view – according to which there’s nothing (apart from effects on existing people) to be said in favor of creating happy people – the case for reducing existential risk is very strong. As noted in this seminal paper, this case is strengthened by the fact that there’s a good chance that many existing people will, with the aid of life-extension technology, live very long and very high quality lives. You might think what I have just argued applies to consequentialists only. There is a tendency to assume that, if an argument appeals to consequentialist considerations (the goodness of outcomes), it is irrelevant to non-consequentialists. But **that is a huge mistake.** Non-consequentialism is the view that there’s more that determines rightness than the goodness of consequences or outcomes; **it is not the view that the latter don’t matter**. Even John Rawls wrote, “All ethical doctrines worth our attention take consequences into account in judging rightness. One which did not would simply be irrational, crazy.” **Minimally plausible versions of deontology and virtue ethics must be concerned in part with promoting the good**, from an impartial point of view. They’d thus imply very strong reasons to reduce existential risk, at least when this doesn’t significantly involve doing harm to others or damaging one’s character. What’s even more surprising, perhaps, is that even if our own good (or that of those near and dear to us) has much greater weight than goodness from the impartial “point of view of the universe,” indeed even if the latter is entirely morally irrelevant, we may nonetheless have very strong reasons to reduce existential risk. Even egoism, the view that each agent should maximize her own good, might imply strong reasons to reduce existential risk. It will depend, among other things, on what one’s own good consists in. If well-being consisted in pleasure only, it is somewhat harder to argue that egoism would imply strong reasons to reduce existential risk – perhaps we could argue that one would maximize her expected hedonic well-being by funding life extension technology or by having herself cryogenically frozen at the time of her bodily death as well as giving money to reduce existential risk (so that there is a world for her to live in!). I am not sure, however, how strong the reasons to do this would be. But views which imply that, if I don’t care about other people, I have no or very little reason to help them are not even minimally plausible views (in addition to hedonistic egoism, I here have in mind views that imply that one has no reason to perform an act unless one actually desires to do that act). To be minimally plausible, egoism will need to be paired with a more sophisticated account of well-being. To see this, it is enough to consider, as Plato did, the possibility of a ring of invisibility – suppose that, while wearing it, Ayn could derive some pleasure by helping the poor, but instead could derive just a bit more by severely harming them. Hedonistic egoism would absurdly imply she should do the latter. To avoid this implication, egoists would need to build something like the meaningfulness of a life into well-being, in some robust way, where this would to a significant extent be a function of other-regarding concerns (see chapter 12 of this classic intro to ethics). But once these elements are included, we can (roughly, as above) argue that this sort of egoism will imply strong reasons to reduce existential risk. Add to all of this Samuel Scheffler’s recent intriguing arguments (quick podcast version available here) that most of what makes our lives go well would be undermined if there were no future generations of intelligent persons. On his view, my life would contain vastly less well-being if (say) a year after my death the world came to an end. So obviously if Scheffler were right I’d have very strong reason to reduce existential risk. **We should also take into account moral uncertainty.** What is it reasonable for one to do, when one is uncertain not (only) about the empirical facts, but also about the moral facts? I’ve just argued that there’s agreement among minimally plausible ethical views that we have strong reason to reduce existential risk – not only consequentialists, but also deontologists, virtue ethicists, and sophisticated egoists should agree. But even those (hedonistic egoists) who disagree should have a significant level of confidence that they are mistaken, and that one of the above views is correct. Even if they were 90% sure that their view is the correct one (and 10% sure that one of these other ones is correct), they would have pretty strong reason, from the standpoint of moral uncertainty, to reduce existential risk. Perhaps most disturbingly still, even if we are only 1% sure that the well-being of possible future people matters, it is at least arguable that, from the standpoint of moral uncertainty, reducing existential risk is the most important thing in the world. Again, this is largely for the reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. (For more on this and other related issues, see this excellent dissertation). Of course, it is uncertain whether these untold trillions would, in general, have good lives. It’s possible they’ll be miserable. It is enough for my claim that there is moral agreement in the relevant sense if, at least given certain empirical claims about what future lives would most likely be like, **all minimally plausible moral views would converge on the conclusion that we should try to save the world**. While there are some non-crazy views that place significantly greater moral weight on avoiding suffering than on promoting happiness, for reasons others have offered (and for independent reasons I won’t get into here unless requested to), they nonetheless seem to be fairly implausible views. And even if things did not go well for our ancestors, I am optimistic that they will overall go fantastically well for our descendants, if we allow them to. I suspect that most of us alive today – at least those of us not suffering from extreme illness or poverty – have lives that are well worth living, and that things will continue to improve. Derek Parfit, whose work has emphasized future generations as well as agreement in ethics, described our situation clearly and accurately: “We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy…. Our descendants might, I believe, make the further future very good. But that good future may also depend in part on us. If our selfish recklessness ends human history, we would be acting very wrongly.” (From chapter 36 of On What Matters)

**b] Forecloses future improvement – we can never improve society because our impact is irreversible**

**c] Turns suffering – mass death causes suffering because people can’t get access to resources and basic necessities**

**d] Moral obligation – allowing people to die is unethical and should be prevented because it creates ethics towards other people**

**e] Objectivity – body count is the most objective way to calculate impacts because comparing suffering is unethical**

#### f] extinction is dominating

## T

**Interpretation: Debaters must defend a just government.**

**Violation: a just government is impossible.**

**Derrida,** Jacques Derrida, “Force of Law: The Mystical Foundation of Authority” But **justice,** however unpresentable it may be, doesn't wait.· It **is that which must not wait.** To be direct, simple and brief, let us say this: **a just decision is always required immediately, "right away." It cannot furnish itself with** infinite information and the **unlimited knowledge of conditions,** rules or hypothetical imperatives **that could justify it.** And **even if it did** have all that at its disposal, even if it did give itself the time, all the time and all the necessary facts about the matter, **the moment of decision,** as such, **always remains a finite moment of urgency** and precipitation, since it must not be the consequence or the effectof this theoretical or historical knowledge, of this reflection or this deliberation, **since it always marks the interruption of the** juridico- or ethico- or politico-**cognitive deliberation that precedes it,** that must precede it. The instant of decision is a madness, says Kierkegaard. This is particularly true of the instant of the just decision that must rend time and defy dialectics. It is a madness. **Even if time** and prudence,the patience of knowledge and the mastery of conditions **were** hypothetically **unlimited, the decision would be structurally finite,** however late it came, decision of urgency and precipitation, **acting in** the night of **non-knowledge and non-rule**

**Standards**

**[1] Semantics are a constraint on voting aff:**

**[A] Jurisdiction: They’re aff but not affirming the res. That’s an indepdent voter since the ballot asks who does the better debating in the context of the res.**

**[B] The topic is the only shared basis we have for preround prep and inround clash on a stable advocacy. Pragmatics only matter if we have a topic to debate.**

**2] predictable limits and ground—allowing the aff to pick any ground for the debate makes neg engagement impossibly by skirting a predictable starting point, allowing for infinite affs and invalidating prep. Caselists are concessionary, unpredictable, beaten by perms, and don’t justify their model.**

#### Voters:

## CP

**CP Text: A just government ought to recognize the right of workers to strike except for healthcare workers during a public health emergency.**

**The counterplan is key to pandemic containment**

**Damery et al 10** S Damery, H Draper, S Wilson, S Greenfield, J Ives, J Parry, J Petts and T Sorell, Journal of Medical Ethics Vol. 36, No. 1 (January 2010), pp. 12-18 (7 pages), "Healthcare workers' perceptions of the duty to work during an influenza pandemic on JSTOR," <https://www.jstor.org/stable/20696709#metadata_info_tab_contents>

The duty to work is presently under scrutiny because of the current swine flu pandemic. Pandemic influenza is, according to the National Risk Register, the potential emergency that is likely to have the greatest impact in the UK,6 and the serious nature of the threat is widely recognised internationally.710 Health services in the UK are already strained, and the situation is set to worsen as winter?the traditional influenza season? approaches. HCWs are at the forefront of both pandemic response and exposure to infection. An effective public health response that ensures that appropriate standards of conventional and critical patient care can be maintained depends on the majority of uninfected HCWs continuing to attend work, despite the risks they might face in doing so. We recently published research suggesting that absenteeism during an influenza pandemic may be significant, depending on the severity of the pandemic and the combination of adverse circum stances that arise as a result.11 In common with others, we have found that there are barriers to both the willingness and the ability to work.11-15 Pandemic preparedness plans typically focus on reducing barriers to ability (such as employers providing HCWs with transport to and from work if they are redeployed to an alternative site, or allowing greater flexibility of working hours).16 These plans assume that ability and willingness are discrete and complementary, such that addressing barriers to ability to work will have a corresponding positive influence on will ingness to do so. However, willingness may not necessarily be increased by the implementation of practical or pragmatic solutions but may be instead more deeply rooted in a number of factors, such as the extent to which HCWs feel included in preparedness planning, or various sociodemo graphic and family issues. These are likely to influence HCWs; willingness to work during a pandemic or other emergency.15 1718 The main findings of a large-scale survey of professional and non-professional HCWs in the West Midlands, which aimed to investigate the factors associated with willingness to work during an influenza pandemic, have been published elsewhere.11

**Pandemics cause extinction**

**Millet and Snyder-Beattie 17** Piers Millett and Andrew Snyder-Beattie, Health Security Volume 15, Number 4, 2017, https://www.liebertpub.com/doi/pdfplus/10.1089/hs.2017.0028

How worthwhile is it spending resources to study and mitigate the chance of human extinction from biological risks? The risks of such a catastrophe are presumably low, so a skeptic might argue that addressing such risks would be a waste of scarce resources. In this article, we investigate this position using a cost-effectiveness approach and ultimately conclude that the expected value of reducing these risks is large, especially since such risks jeopardize the existence of **all future human lives.** Historically, disease events have been responsible for the **greatest death tolls** on humanity. The 1918 flu was responsible for more than 50 million deaths,1 while smallpox killed perhaps 10 times that many in the 20th century alone.2 The Black Death was responsible for killing over 25% of the European population,3while other pandemics, such as the plague of Justinian, are thought to have killed 25 million in the 6th century—constituting over 10% of the world's population at the time.4 It is an open question whether a future pandemic could result in outright **human extinction or the irreversible collapse of civilization**. A skeptic would have many good reasons to think that existential risk from disease is unlikely. Such a disease would need to spread worldwide to remote populations, overcome rare genetic resistances, and evade detection, cures, and countermeasures. Even evolution itself may work in humanity's favor: Virulence and transmission is often a trade-off, and so evolutionary pressures could push against maximally lethal wild-type pathogens.5,6 While these arguments point to a very small risk of human extinction, they do not rule the possibility out entirely. Although rare, there are recorded instances of species going extinct due to disease—primarily in amphibians, but also in 1 mammalian species of rat on Christmas Island.7,8 There are also historical examples of large human populations being almost entirely wiped out by disease, especially when multiple diseases were simultaneously introduced into a population without immunity. The most striking examples of total population collapse include native American tribes exposed to European diseases, such as the Massachusett (86% loss of population), Quiripi-Unquachog (95% loss of population), and the Western Abenaki (which suffered a staggering 98% loss of population).9 In the modern context, no single disease currently exists that combines the worst-case levels of transmissibility, lethality, resistance to countermeasures, and global reach. But many diseases are proof of principle that each worst-case attribute can be realized independently. For example, some diseases exhibit nearly a 100% case fatality ratio in the absence of treatment, such as rabies or septicemic plague. Other diseases have a track record of spreading to virtually every human community worldwide, such as the 1918 flu,10 and seroprevalence studies indicate that other pathogens, such as chickenpox and HSV-1, can successfully reach over 95% of a population.11,12 Under optimal virulence theory, natural evolution would be an unlikely source for pathogens with the highest possible levels of transmissibility, virulence, and global reach. But advances in biotechnology might allow the creation of diseases that combine such traits. Recent controversy has already emerged over a number of scientific experiments that resulted in viruses with enhanced transmissibility, lethality, and/or the ability to overcome therapeutics.13-17 Other experiments demonstrated that mousepox could be modified to have a 100% case fatality rate and render a vaccine ineffective.18 In addition to transmissibility and lethality, studies have shown that other disease traits, such as incubation time, environmental survival, and available vectors, could be modified as well.19-21 Although these experiments had scientific merit and were not conducted with malicious intent, their implications are still worrying. This is especially true given that there is also a long historical track record of state-run bioweapon research applying cutting-edge science and technology to design agents not previously seen in nature. The Soviet bioweapons program developed agents with traits such as enhanced virulence, resistance to therapies, greater environmental resilience, increased difficulty to diagnose or treat, and which caused unexpected disease presentations and outcomes.22 Delivery capabilities have also been subject to the cutting edge of technical development, with Canadian, US, and UK bioweapon efforts playing a critical role in developing the discipline of aerobiology.23,24 While there is no evidence of state-run bioweapons programs directly attempting to develop or deploy bioweapons that would pose an existential risk, the logic of deterrence and mutually assured destruction could create such incentives in more unstable political environments or following a breakdown of the Biological Weapons Convention.25The possibility of a war between great powers could also increase the pressure to use such weapons—during the World Wars, bioweapons were used across multiple continents, with Germany targeting animals in WWI,26 and Japan using plague to cause an epidemic in China during WWII.27 **Non-state actors** may also pose a risk, especially those with explicitly omnicidal aims. While rare, there are examples. The Aum Shinrikyo cult in Japan sought biological weapons for the express purpose of causing extinction.28 Environmental groups, such as the Gaia Liberation Front, have argued that “we can ensure Gaia's survival only through the extinction of the Humans as a species … we now have the specific technology for doing the job … several different [genetically engineered] viruses could be released”(quoted in ref. 29). Groups such as R.I.S.E. also sought to protect nature by destroying most of humanity with bioweapons.30 Fortunately, to date, non-state actors have lacked the capabilities needed to pose a catastrophic bioweapons threat, but this could **change in future decades** as biotechnology becomes **more accessible** and the pool of experienced users grows.31,32 What is the appropriate response to these speculative extinction threats? A balanced biosecurity portfolio might include investments that reduce a mix of proven and speculative risks, but striking this balance is still difficult given the massive uncertainties around the low-probability, high-consequence risks. In this article, we examine the traditional spectrum of biosecurity risks (ie, biocrimes, bioterrorism, and biowarfare) to categorize biothreats by likelihood and impact, expanding the historical analysis to consider even lower-probability, higher-consequence events (catastrophic risks and existential risks). In order to produce reasoned estimates of the likelihood of different categories of biothreats, we bring together relevant data and theory and produce some first-guess estimates of the likelihood of different categories of biothreat, and we use these initial estimates to compare the cost-effectiveness of reducing existential risks with more traditional biosecurity measures. We emphasize that these models are highly uncertain, and their utility lies more in enabling order-of-magnitude comparisons rather than as a precise measure of the true risk. However, even with the most conservative models, we find that reduction of low-probability, high-consequence risks can be **more cost-effective,** as measured by quality-adjusted life year per dollar, especially when we account for the lives of **future generations.** This suggests that **despite the low probability** of such events, society still ought to invest more in preventing the most extreme possible biosecurity catastrophes.

## Case

**Offense**

**Strikes alienate the worker by homogenizing interests and sparking countermobilization.**

**Grant and Wallace 91** [Don Sherman Grant; Ohio State University; Michael Wallace; Indiana University; “Why Do Strikes Turn Violent?” University of Chicago Press; March 1991; <https://www.jstor.org/stable/pdf/2781338.pdf?refreqid=excelsior%3Aca3144a9ae9e4ac65e285f2c67451ffb>] Justin

\*\*RM = Resource-Mobilization, or Strikes

3. Violent tactics.-Violent tactics are viewed by RM theorists **exclu- sively** as purposeful strategies by challengers for inciting social change with **little recognition** of how **countermobilization** strategies of elites also **create violence**. The role of elite counterstrategies has been **virtually ig- nored in research on collective violence**. Of course, history is **replete** with examples of elites' inflicting violence on challenging groups with the full sanction of the state. Typically, elite-sponsored violence occurs when the power resources and legal apparatus are so one-sidedly in the elites' favor that the outcome is never in doubt. In conflicts with weak insiders, elites may not act so openly unless weak insiders flaunt the law. Typically, elite strategies **do not** overtly promote violence but rather **provoke violence by the other side in hopes of eliciting public condemnation** or more vigorous state repression of challenger initiatives. This is a critical dynamic in struggles involving weak insiders such as unions. In these cases, worker violence, even when it appears justified, erodes **public support for the workers' cause and damages the union's insider status**.

4. Homogeneity and similarity.-Many RM theorists **incorrectly** as- sume that members of aggrieved groups are **homogeneous** in their inter- ests and share similar positions in the social structure. This (assumed) homogeneity of interests is rare for members of outsider groups and even more suspect for members of weak-insider groups. Indeed, groups are **rarely uniform** and often include relatively advantaged persons who have other, more peaceful channels in which to **pursue their goals**. Internal stratification processes mean that different persons have **varying invest- ments** in current structural arrangements, in addition to their collective interest in affecting social change. Again, these forces are especially prev- alent for weak insiders: even the group's lowest-status members are likely to have a marginal stake in the system; high-status members are likely to have a larger stake and, therefore, less commitment to dramatic change in the status quo.

Internal differences may lead to **fragmentation of interests** and **lack of consensus about tactics**, especially tactics suggesting violent confronta- tion. While group members share common grievances, individual mem- bers may be **differentially aggrieved by the current state of affairs** or differentially exposed to elite repression. White's (1989) research on the violent tactics of the Irish Republican Army shows that working-class members and student activists, when compared with middle-class partici- pants, are more vulnerable to **state-sponsored repression**, more likely to be available for protest activities, and reap more benefits from political violence. When we apply them to our study of strike violence, we find that differences in skill levels are known to coincide with major intraclass 1120 Strikes divisions in material interests (Form 1985) and are likely to coincide with the tendency for violent action. For instance, skilled-craft workers, who are more socially and politically conservative than unskilled workers, are less likely to view relations with employers as inherently antagonistic and are prone to separate themselves from unskilled workers, factors that should decrease their participation in violence.