## 1

### 1nc – t

#### Interpretation – topical affs must defend a reduction of intellectual property protections for *medicines*.

#### Violations:

#### 1) they reduce IP protections on *vaccines* which is categorically distinct

#### 2) Violation: vaccines are medical interventions, not medicines

Elbe 10 [Stefan Elbe, director of the Centre for Global Health Policy and a professor of international relations at the University of Sussex. "Security and Global Health," ISBN 0745643744, accessed 8-10-2021, https://www.wiley.com/en-ee/Security+and+Global+Health-p-9780745643731] HWIC

Yet here too we must be careful not to overlook other types of medical intervention simultaneously pursued by the 'social' arm of modern medicine at the population level. Vaccines in particular continue to be particularly important medical interventions that repeatedly surface in a variety of different health security delib- erations. Strictly speaking, vaccines are not medicines because they consist of small concentrations of disease-causing microbes (or their derivatives) used to enhance a person's immuno-response to a future infection. As a public health measure, vaccines have therefore also been largely sidelined in the existing medicalization literature. Yet, generally speaking, vaccines too can be considered as medical inter- ventions. That is certainly how the World Health Organization views them, pointing out that 'vaccines are among the most important medical interventions for reducing illness and deaths' available today (WHO 2009a). Whereas pills and other therapies mark the tools of clinical medicine, vaccines play a crucial part in the arsenal of 'social' medicine and public health. Developing and rolling out of new vaccines against a range of current (and future) diseases therefore represents further evidence of how the rise of health security is also encouraging security to be practised through the introduction of new medical interventions in society.

#### Vaccines are different from medicines in the context of intellectual property

Garrison 04 [Christopher Garrison, Consultant Legal Advisor to WHO. "Intellectual Property Rights and Vaccines in Developing countries," 04-13-2004, accessed 9-2-2021, https://www.who.int/intellectualproperty/events/en/Background\_paper.pdf?ua=1] HWIC

In the last few years, there has been a substantial debate about how intellectual property impacts medicines and in particular how the TRIPS Agreement impacts access to medicines in the developing world. Vaccines are different from medicines in a number of important respects however (at least from the small molecule ‘pill’ medicines if not the newer ‘biotech’ medicines). The issues raised in the access to medicines debate may therefore apply to a greater or lesser extent for vaccines, depending on these differences. This section examines a few of the different forms of intellectual property rights that are relevant in the context of vaccines and outlines the impact of some of the differences between vaccines and medicines.

#### Prefer –

#### Limits – allowing non medicines explodes limits to include affs that defend reducing protections for surgeries, therapy, injury prevention, cosmetic procedures, etc. – makes neg prep impossible because the case neg to the Botox and Laser Eye Surgery affs would have no overlap – privileges the aff by stretching pre-tournament neg prep too thin and precluding nuanced rigorous testing of aff

#### Use c/I for norm setting – t is a yes/no question

#### No rvis – you have a burden to be topical

## 2

### 1nc – t

#### Interpretation—topical affs may not specify medicines

#### Bare plurals imply a generic “rules reading” in the context of moral statements

Cohen 1 — (Ariel Cohen, Professor of Linguistics @ Ben-Gurion University of the Negev, PhD Computational Linguistics from Carnegie Mellon University, “On the Generic Use of Indefinite Singulars”. Journal of Semantics 18: 183-209, Oxford University Press, 2001, accessed 12-7-20, HKR-AM) \*\*BP = bare plurals

According to the rules and regulations view, on the other hand, generic sentences do not get their truth or falsity as a consequence of properties of individual instances. Instead, generic sentences are evaluated with regard to rules and regulations, which are basic, irreducible entities in the world. Each generic sentence denotes a rule; if the rule is in effect, in some sense (different theories suggest different characterizations of what it means for a rule to be in effect), the sentence is true, otherwise it is false. The rule may be physical, biological, social, moral, etc. The paradigmatic cases for which this view seems readily applicable are sentences that refer to conventions, i.e. man-made, explicit rules and regulations, such as the following example (Carlson 1995: 225):

(40) Bishops move diagonally.

Carlson describes the two approaches as a dichotomy: one has to choose one or the other, but not both. One way to decide which approach to choose is to consider a case where the behavior of observed instances conflicts with an explicit rule. Indeed, Carlson discusses just such a case. He describes a supermarket where bananas sell for $0.49/lb, so that (41a) is true. One day, the manager decides to raise the price to $1.00/lb. Immediately after the price has changed, claims Carlson, sentence (41a) becomes false and sentence (41b) becomes true, although the overwhelming majority of sold bananas were sold for $0.49/lb.

(41) a. Bananas sell for $0.49/lb.

b. Bananas sell for $1.00/lb.

Consequently, Carlson reaches the conclusion that the rules and regulations approach is the correct one, whereas the inductivist view is wrong.

While I share Carlson’s judgements, I do not accept the conclusion he draws from them. Suppose the price has, indeed, changed, but the supermarket employs incompetent cashiers who consistently use the old price by mistake, so that customers are still charged $0.49/lb. In this case, I think there is a reading of (41a) which is true, and a reading of (41b) which is false. These readings are more salient if the sentence is modified by expressions such as actually or in fact:

(42) a. Bananas actually sell for $0.49/lb.

b. In fact, bananas sell for $1.00/lb.

BP generics, I claim, are ambiguous: on one reading they express a descriptive generalization, stating the way things are. Under the other reading, they carry a normative force, and require that things be a certain way. When they are used in the former sense, they should be analysed by some sort of inductivist account; when they are used in the latter sense, they ought to be analysed as referring to a rule or a regulation. The respective logical forms of the two readings are different; whereas the former reading involves, in some form or another, quantification, the latter has a simple predicate-argument structure: the argument is the rule or regulation, and the predicate holds of it just in case the rule is ‘in effect’.

#### Violation: they specified distribution of vaccines and research

#### Vote neg:

**1] c/a Limits impact - infinite number of affs are possible under their interp which is unpredictable**

**2] TVA solves – read the aff as advantage – most authors advocate for a change in WTO policy broadly and no reason why aff spec is key**

## 3

### 1nc – k

#### **Regulating intellectual property participates in a scarcity logic that re-affirms a broader market ownership over information – that consolidates neoliberal control through a shift to private protections, even if the individual act of the aff is good**

Soderberg 1 [Johan, BA from Falmouth College of the Arts. “Copyleft vs Copyright: A Marxist Critique” https://firstmonday.org/article/view/938/860]

"The contradiction that lies at the heart of the political economy of intellectual property is between the low to non-existent marginal cost of reproduction of knowledge and its treatment as scarce property" [23].

This contradiction [24], May demonstrates, is concealed by information capitalists whose interests are best served if ideas are treated as analogous to scarce, material property [25]. The privatisation of cultural expressions corresponds to the enclosure of public land in the fifteenth to eighteenth century.

As then, the new enclosure is concerned with creating conditions for excludability. Lawrence Lessig lists four methods to direct the behaviour of the individual to comply with property regulation: social norms, markets, architecture (including technology and code), and law. "Constraints work together, though they function differently and the effect of each is distinct. Norms constrain through the stigma that a community imposes; markets constrain through the price that they extract; architectures constrain through the physical burdens they impose; and law constrains through the punishment it threatens" [26].

Several new national laws have been passed in recent years on intellectual property rights. In the U.S. the Digital Millennium Copyright Act was passed in 1998 and has been imitated by legislation in Europe. The European Patent Office circumvented scheduled political decisions to be taken by European governments, and decreed a regulation that authorises patent claims to computer programmes [27]. These national laws were implemented under the direction of what is known as the Uruguay Round agreements [28], established by the World Trade Organisation (WTO). As a part of the bargain came the treaty of Trade Related Intellectual Property (TRIP), and its importance lies in two respects: "as an extension of the rights accorded to the owners of intellectual property and as part of the extension of a property-based market liberalism into new areas of social interaction, previously outside market relations" [29]. Simply by coordinating national regulations on a global level the net of intellectual property is tightened. TRIP was backed by American and European pharmacy companies and entertainment industries, and unsuccessfully opposed by the developing nations and northern civil society.

Despite the rigged debate on intellectual property in the mainstream media [30], the rhetoric of 'piracy' has not transformed social norms to any greater extent. The failure to curb copying is linked with the low costs and low risks for individuals to copy, i.e. the non-existent constriction of the market. However, Bettig remarks "The initial period following the introduction of a new communications medium often involves a temporary loss of control by copyright owners over the use of their property" [31].

Similarly, Lessig warns against the false reliance, common among hackers, that information technology is inherently anarchistic. The industry is determined to re-design hardware and software to command compliance with the intellectual property regime. "Code can, and will, displace law as the primary defence of intellectual property in cyberspace" [32]. It is predominantly this struggle that I now will attend to.

#### Capitalism is quickly reaching its ecological, structural, and psychological limits and causes near-term extinction – laundry list.

Robinson 16 (William, Professor of sociology, global studies and Latin American studies at the University of California at Santa Barbara. His most recent book is Global Capitalism and the Crisis of Humanity. | “Sadistic Capitalism: Six Urgent Matters for Humanity in Global Crisis” in *Truth-out*, April 12, 2016. <http://www.truth-out.org/opinion/item/35596-sadistic-capitalism-six-urgent-matters-for-humanity-in-global-crisis> )//tbrooks

The "luxury shanty town" in South Africa is a fitting metaphor for global capitalism as a whole. Faced with a stagnant global economy, elites have managed to turn war, structural violence and inequality into opportunities for capital, pleasure and entertainment. It is hard not to conclude that unchecked capitalism has become what I term "sadistic capitalism," in which the suffering and deprivation generated by capitalism become a source of aesthetic pleasure, leisure and entertainment for others. I recently had the opportunity to travel through several countries in Latin America, the Middle East, North Africa, East Asia and throughout North America. I was on sabbatical to research what the global crisis looks like on the ground around the world. Everywhere I went, social polarization and political tensions have reached explosive dimensions. Where is the crisis headed, what are the possible outcomes and what does it tell us about global capitalism and resistance? This crisis is not like earlier structural crises of world capitalism, such as in the 1930s or 1970s. This one is fast becoming systemic. The crisis of humanity shares aspects of earlier structural crises of world capitalism, but there are six novel, interrelated dimensions to the current moment that I highlight here, in broad strokes, as the "big picture" context in which countries and peoples around the world are experiencing a descent into chaos and uncertainty. 1) The level of global social polarization and inequality is unprecedented in the face of out-of-control, over-accumulated capital. In January 2016, the development agency Oxfam [published a follow-up](https://www.oxfam.org/en/pressroom/pressreleases/2016-01-18/62-people-own-same-half-world-reveals-oxfam-davos-report) to its report on global inequality that had been released the previous year. According to the new report, now just 62 billionaires -- down from 80 identified by the agency in its January 2015 report -- control as much wealth as one half of the world's population, and the top 1% owns more wealth than the other 99% combined. Beyond the transnational capitalist class and the upper echelons of the global power bloc, the richest 20 percent of humanity owns some 95 percent of the world's wealth, while the bottom 80 percent has to make do with just 5 percent. This 20-80 divide of global society into haves and the have-nots is the new global social apartheid. It is evident not just between rich and poor countries, but within each country, North and South, with the rise of new affluent high-consumption sectors alongside the downward mobility, "precariatization," destabilization and expulsion of majorities. Escalating inequalities fuel capitalism's chronic problem of over-accumulation: The transnational capitalist class cannot find productive outlets to unload the enormous amounts of surplus it has accumulated, leading to stagnation in the world economy. The signs of an impending depression are everywhere. The front page of the February 20 issue of The Economist read, "[The World Economy: Out of Ammo?](http://www.economist.com/news/leaders/21693204-central-bankers-are-running-down-their-arsenal-other-options-exist-stimulate)" Extreme levels of social polarization present a challenge to dominant groups. They strive to purchase the loyalty of that 20 percent, while at the same time dividing the 80 percent, co-opting some into a hegemonic bloc and repressing the rest. Alongside the spread of frightening new systems of social control and repression is heightened dissemination through the culture industries and corporate marketing strategies that depoliticize through consumerist fantasies and the manipulation of desire. As "Trumpism" in the United States so well illustrates, another strategy of co-optation is the manipulation of fear and insecurity among the downwardly mobile so that social anxiety is channeled toward scapegoated communities. This psychosocial mechanism of displacing mass anxieties is not new, but it appears to be increasing around the world in the face of the structural destabilization of capitalist globalization. Scapegoated communities are under siege, such as the Rohingya in Myanmar, the Muslim minority in India, the Kurds in Turkey, southern African immigrants in South Africa, and Syrian and Iraqi refugees and other immigrants in Europe. As with its 20th century predecessor, 21st century fascism hinges on such manipulation of social anxiety at a time of acute capitalist crisis. Extreme inequality requires extreme violence and repression that lend to projects of 21st century fascism. 2) The system is fast reaching the ecological limits to its reproduction. We have reached several tipping points in what environmental scientists refer to as nine crucial "planetary boundaries." [We have already exceeded these boundaries in three areas](http://www.amazon.com/Ecological-Rift-Capitalisms-War-Earth/dp/1583672184/ref=sr_1_1?ie=UTF8&qid=1460153228&sr=8-1&keywords=the+ecological+rift) -- climate change, the nitrogen cycle and diversity loss. There have been five previous mass extinctions in earth's history. While all these were due to natural causes, for the first time ever, human conduct is intersecting with and fundamentally altering the earth system. We have entered what Paul Crutzen, the Dutch environmental scientist and Nobel Prize winner, termed the Anthropocene -- a new age in which humans have transformed up to half of the world's surface. We are altering the composition of the atmosphere and acidifying the oceans at a rate that undermines the conditions for life. The ecological dimensions of global crisis cannot be understated. "We are deciding, without quite meaning to, which evolutionary pathways will remain open and which will forever be closed," observes Elizabeth Kolbert in her best seller, [The Sixth Extinction](http://www.amazon.com/Sixth-Extinction-Unnatural-History/dp/1250062187/ref=sr_1_1?s=books&ie=UTF8&qid=1457393458&sr=1-1&keywords=the+sixth+extinction). "No other creature has ever managed this ... The Sixth Extinction will continue to determine the course of life long after everything people have written and painted and built has been ground into dust." [Capitalism cannot be held solely responsible](http://www.amazon.com/Collapse-Societies-Choose-Succeed-Revised/dp/0143117009/ref=sr_1_1?ie=UTF8&qid=1460153265&sr=8-1&keywords=collapse+book). The human-nature contradiction has deep roots in civilization itself. The ancient Sumerian empires, for example, collapsed after the population over-salinated their crop soil. The Mayan city-state network collapsed about AD 900 due to deforestation. And the former Soviet Union wrecked havoc on the environment. However, given capital's implacable impulse to accumulate profit and its accelerated commodification of nature, it is difficult to imagine that the environmental catastrophe can be resolved within the capitalist system. "Green capitalism" appears as an oxymoron, as sadistic capitalism's attempt to turn the ecological crisis into a profit-making opportunity, along with the conversion of poverty into a tourist attraction. 3) The sheer magnitude of the means of violence is unprecedented, as is the concentrated control over the means of global communications and the production and circulation of knowledge, symbols and images. We have seen the spread of frightening new systems of social control and repression that have brought us into the panoptical surveillance society and the age of thought control. This real-life Orwellian world is in a sense more perturbing than that described by George Orwell in his iconic novel 1984. In that fictional world, people were compelled to give their obedience to the state ("Big Brother") in exchange for a quiet existence with guarantees of employment, housing and other social necessities. Now, however, the corporate and political powers that be force obedience even as the means of survival are denied to the vast majority. Global apartheid involves the creation of "green zones" that are cordoned off in each locale around the world where elites are insulated through new systems of spatial reorganization, social control and policing. "Green zone" refers to the nearly impenetrable area in central Baghdad that US occupation forces established in the wake of the 2003 invasion of Iraq. The command center of the occupation and select Iraqi elite inside that green zone were protected from the violence and chaos that engulfed the country. Urban areas around the world are now green zoned through gentrification, gated communities, surveillance systems, and state and private violence. Inside the world's green zones, privileged strata avail themselves of privatized social services, consumption and entertainment. They can work and communicate through internet and satellite sealed off under the protection of armies of soldiers, police and private security forces. Green zoning takes on distinct forms in each locality. In Palestine, I witnessed such zoning in the form of Israeli military checkpoints, Jewish settler-only roads and the apartheid wall. In Mexico City, the most exclusive residential areas in the upscale Santa Fe District are accessible only by helicopter and private gated roads. In Johannesburg, a surreal drive through the exclusive Sandton City area reveals rows of mansions that appear as military compounds, with private armed towers and electrical and barbed-wire fences. In Cairo, I toured satellite cities ringing the impoverished center and inner suburbs where the country's elite could live out their aspirations and fantasies. They sport gated residential complexes with spotless green lawns, private leisure and shopping centers and English-language international schools under the protection of military checkpoints and private security police. In other cities, green zoning is subtler but no less effective. In Los Angeles, where I live, the freeway system now has an express lane reserved for those that can pay an exorbitant toll. On this lane, the privileged speed by, while the rest remain one lane over, stuck in the city's notorious bumper-to-bumper traffic -- or even worse, in notoriously underfunded and underdeveloped public transportation, where it may take half a day to get to and from work. There is no barrier separating this express lane from the others. However, a near-invisible closed surveillance system monitors every movement. If a vehicle without authorization shifts into the exclusive lane, it is instantly recorded by this surveillance system and a heavy fine is imposed on the driver, under threat of impoundment, while freeway police patrols are ubiquitous. Outside of the global green zones, warfare and police containment have become normalized and sanitized for those not directly at the receiving end of armed aggression. "Militainment" -- portraying and even glamorizing war and violence as entertaining spectacles through Hollywood films and television police shows, computer games and corporate "news" channels -- may be the epitome of sadistic capitalism. It desensitizes, bringing about complacency and indifference. In between the green zones and outright warfare are prison industrial complexes, immigrant and refugee repression and control systems, the criminalization of outcast communities and capitalist schooling. The omnipresent media and cultural apparatuses of the corporate economy, in particular, aim to colonize the mind -- to undermine the ability to think critically and outside the dominant worldview. A neofascist culture emerges through militarism, extreme masculinization, racism and racist mobilizations against scapegoats. 4) We are reaching limits to the extensive expansion of capitalism. Capitalism is like riding a bicycle: When you stop pedaling the bicycle, you fall over. If the capitalist system stops expanding outward, it enters crisis and faces collapse. In each earlier structural crisis, the system went through a new round of extensive expansion -- from waves of colonial conquest in earlier centuries, to the integration in the late 20th and early 21st centuries of the former socialist countries, China, India and other areas that had been marginally outside the system. There are no longer any new territories to integrate into world capitalism. Meanwhile, the privatization of education, health care, utilities, basic services and public land are turning those spaces in global society that were outside of capital's control into "spaces of capital." Even poverty has been turned into a commodity. What is there left to commodify? Where can the system now expand? With the limits to expansion comes a turn toward militarized accumulation -- making wars of endless destruction and reconstruction and expanding the militarization of social and political institutions so as to continue to generate new opportunities for accumulation in the face of stagnation. 5) There is the rise of a vast surplus population inhabiting a "planet of slums," alienated from the productive economy, thrown into the margins and subject to these sophisticated systems of social control and destruction. Global capitalism has no direct use for surplus humanity. But indirectly, it holds wages down everywhere and makes new systems of 21st century slavery possible. These systems include prison labor, the forced recruitment of miners at gunpoint by warlords contracted by global corporations to dig up valuable minerals in the Congo, sweatshops and exploited immigrant communities (including the rising tide of immigrant female caregivers for affluent populations). Furthermore, the global working class is experiencing accelerated "precariatization." The "new precariat" refers to the proletariat that faces capital under today's unstable and precarious labor relations -- informalization, casualization, part-time, temp, immigrant and contract labor. As communities are uprooted everywhere, there is a rising reserve army of immigrant labor. The global working class is becoming divided into citizen and immigrant workers. The latter are particularly attractive to transnational capital, as the lack of citizenship rights makes them particularly vulnerable, and therefore, exploitable. The challenge for dominant groups is how to contain the real and potential rebellion of surplus humanity, the immigrant workforce and the precariat. How can they contain the explosive contradictions of this system? The 21st century megacities become the battlegrounds between mass resistance movements and the new systems of mass repression. Some populations in these cities (and also in abandoned countryside) are at risk of genocide, such as those in Gaza, zones in Somalia and Congo, and swaths of Iraq and Syria. 6) There is a disjuncture between a globalizing economy and a nation-state-based system of political authority. Transnational state apparatuses are incipient and do not wield enough power and authority to organize and stabilize the system, much less to impose regulations on runaway transnational capital. In the wake of the 2008 financial collapse, for instance, the governments of the G-8 and G-20 were unable to impose transnational regulation on the global financial system, despite a series of emergency summits to discuss such regulation.

#### The alternative is to engage in anticapitalism, an act of radical resistance grounded in grassroots movements. Anticapitalism does not represent an unattainable utopia but challenges common myths about capitalism as a whole.

Rogers 14 (Chris Rogers, author, *Capitalism and Its Alternatives: A Critical Introduction*, Zed Books, 2014. ProQuest Ebook Central, <https://ebookcentral-proquest-com.proxy.lib.umich.edu/lib/umichigan/detail.action?docID=1758713>.) AM

*A note on terminology* The book will draw on four core concepts. The first of these is capitalism. The term capitalism is used throughout the book to refer to the prevailing form of social organization. While acknowledging that the ways in which capitalism operates and the implications of these operations are contested, this book defines capital­ ism in terms of one commonly accepted distinguishing feature: that capitalism is a system that organizes the production, distribution and exchange of goods, on the basis of private property, with a view to realizing profit and therefore increasing wealth. The second term is alternative capitalism, which is used to describe a system where the capitalistic relationship between state and market is re-regulated, but not fundamentally reformed, in order to try to produce optimal social and economic outcomes. The aim of an alternative capitalism is to maximize wealth and profit by introducing a different structure of rules to govern capitalism. The third concept is that of an alternative to capitalism. An alternative to capitalism is distinct from capitalism because it places an emphasis on social and civic goals, rather than purely focusing on pecuniary gain. In contrast to capitalism, an alternative to capitalism is founded on collective or community property rights, rather than individual property rights, although the form and extent of collective or community property rights may vary. Where the book is referring to either an alternative capitalism or an alternative to capitalism, it uses the form ‘alternative (to) capitalism’. The final concept the book uses is anti-capitalism. It uses the term anti-capitalism to refer to the act of resisting capitalism, whether this occurs by attempting to influence the state, taking control of the state, or actions taken independently or outside of the state. An individual who pursues or wishes to pursue an alternative to capitalism can therefore be described as an anti-capitalist.

Traditions of Resistance   
In its consideration of capitalism and its alternatives, this book accepts that it is possible to perceive capitalism and its con­ sequences in different ways. Furthermore, it acknowledges that the way in which capitalism and its consequences are perceived will have a fundamental impact on whether people deem capitalism to be desirable, whether they would prefer an alternative capitalism or an alternative to capitalism, and therefore whether they believe that it is important and worthwhile engaging in resistance to capitalism through the social act of anti-capitalism. However, the central argument of this book is that **capitalism displays intrinsic tendencies towards crisis that make an alternative to capitalism desirable, and so justifies anti-capitalist action**. In doing so, it argues that capitalism is a product of social interaction between people, and that it is remade or resisted through our social action. This ­emphasis on social constitution challenges common assertions about the inevitability of capitalist logic, and in the process shows that the prospect of realizing an alternative to capitalism is more than wishful thinking. In its discussions of alternatives to capitalism, however, this book guards against thinking of alternative forms of social organization as outcomes or utopias. Rather, it shows how various forms of alternative social and economic organization have shown a tendency to degenerate over time, or to reproduce injustices of capitalist social relations. It therefore suggests that **alternatives to capitalism should be thought of as processes that need to be continually made and remade if they are not to degenerate or reproduce the injustices of capitalist social relations, and if desirable outcomes are to be realized**. Reflecting the book’s emphasis on the social constitution of economy and society, it rejects ‘top-down’ attempts to impose an alternative to capitalism by political means, and argues that anticapitalist action should take a ‘bottom-up’ form, which requires democratic and pluralistic experimentation with different models of social and economic organization to expand the space in which non-capitalist activity takes place.

The arguments of the book therefore fit with a long tradition of anti-capitalist resistance. One of the most well-known instances of this kind of resistance was the insurrections of 1968, typified by the student revolts in Paris in May of that year. However, as Michael Watts (2001: 167) noted, the events of 1968 were far more than a local phenomenon; over seventy countries ‘had major student ­ actions during that year [and between] October 1967 and July 1968 there were over 2000 incidents worldwide of student protest alone’. Furthermore, it was not just students engaged in the act of protest, the act of anti-capitalism. According to Watts’ (ibid.: 167) study, ‘if one were to add the related worker and other nonstudent demonstrations each country in the world would, on average, have had over 20 “incidents” over the nine-month period’. Nor was the substance of the protest uniform; 1968 had what Watts (ibid.: 171– 2) has described as its Eastern, Western and Southern moments. In the first, typified by the Prague Spring and the Cultural Revolution in China, the focus of protests was anti-bureaucratic, and directed against the ‘Old Left’ and the corruption people perceived in it. In the second, typified by student protests in Paris and Berkeley, the focus of protests was opposition to consumerism and the pursuit of civil and social rights. In the third, the focus was the rejection of authority in the first generation of independent states in Africa and Latin America, where military dictatorship had displaced democratic rule.

Luc Boltanski (2002: 6) also highlights the diversity of the 1968 movement by distinguishing between its social and artistic critiques, where the former focused on inequality and poverty stemming from capitalism, and the latter on liberation, individual autonomy and authenticity. Michael Löwy (2002: 95) links this distinction between the social and artistic critique of capitalism to romanticism, which he defines as ‘rebellion against modern capitalist society, in the name of past or premodern social and cultural values, as a protest against the modern disenchantment of the world’. Therefore, the significance of 1968 can be seen not just across space, but also as a reflection of long-established traditions of resistance to prevailing social, political and economic forms or organization. On such readings, the events of 1968 can be interpreted as a demonstration of long-standing anti-capitalist feeling that rested on a critique of the world we live in and the injustices it creates, and in turn motivated action in order to try to address them.

#### Evaluate the epistemological assumptions of the 1ac prior to its consequences – anything else allows for the proliferation of hypothetical scenarios without an analysis of the underlying broader causes of what informs our decision making

## 4

### 1nc – cp

#### CP: France, Germany, Sweden, and Italy should:

* substantially increase COVID vaccine production to meet the global demand
* sign bilateral intellectual property licensing contracts with low and middle-income countries to share vaccines
* donate all necessary vaccines at no cost to low and middle-income nations unable to license intellectual property rights

#### Eliminating IPR for vaccines gives China a massive competitive edge on innovation broadly – tanks pharma, undermines pandemic response, and tech leadership – BUT domestic production and distribution solves

Okutsu & Sharma 21 [Akane, staff writer for Nikkei International, and Kiran, LPC, The College of Law, Guildford, 1997 BA (Hons), Law, Gonville & Caius College, Cambridge University, 1996. “Vaccine Patent Waiver: COVID Stopper or Innovation Killer?” https://asia.nikkei.com/Spotlight/Coronavirus/COVID-vaccines/Vaccine-patent-waiver-COVID-stopper-or-innovation-killer]

Western pharmaceutical companies are telling U.S. officials that they fear exposing their technologies to China, the Financial Times reported. The still-under-wraps expertise could be used not only for COVID-19 shots but other vaccines and therapeutics, stripping the companies of their competitive edge.

Pfizer and Moderna have produced what are called messenger RNA vaccines, a new technology that does not contain live virus and instead instructs cells to produce a protein found in the coronavirus, creating immunity. China's vaccine producers, meanwhile, have relied on conventional methods using weakened virus.

The Pharmaceutical Research and Manufacturers of America released a statement that the U.S. stance on the waiver means "handing over American innovations to countries looking to undermine our leadership in biomedical discovery."

But some say the waiver would not be an automatic win for China.

One reason is that its pharmaceutical companies would not be immune if prices fall. "There would be competitive pressure and a negative impact on pharmaceutical companies in and outside of the U.S." including China, said Banri Ito, professor at Japan's Aoyama Gakuin University.

The stock market seems to agree. Chinese vaccine makers including CanSino Biologics and Shanghai Fosun Pharmaceutical Group fell after the U.S. announcement, just like the shares of Pfizer and Moderna.

China's state media has been lukewarm toward the U.S. move, calling it a "political tactic."

How would it affect the pharmaceutical industry over the long term?

One major concern is a loss of incentives for costly research and development.

Pharmaceutical research has a low success rate and requires enormous sums of money. Without the profits generated from intellectual property rights, "there would be no new drugs," as companies would have no hope of recouping their investments, a JPMA spokesperson said.

#### Biopharma innovation is key to overall competitiveness – US still has a razor thin lead but IP is uniquely key

Ezell 20 [Stephen Ezell, Director of Global Innovation Policy at the Information Technology and Innovation Foundation (ITIF). "Ensuring U.S. Biopharmaceutical Competitiveness." 7/16/20. https://itif.org/publications/2020/07/16/ensuring-us-biopharmaceutical-competitiveness]

Nations are competing for increased market share in a wide array of advanced-innovation industries, understanding that these industries are the key to competitiveness, national security, and good jobs. China’s “Made in China 2025” strategy is perhaps the most visible of these efforts, but by no means the only one.

Many nations, including China, have targeted the biopharmaceuticals industry—an industry which the United States has long led—especially in drug innovation. One result has been that over the last decade U.S. biopharmaceutical manufacturing value-added output has fallen by almost one-third, as the U.S. trade deficit in drugs and inputs has increased. Fortunately, America still leads in innovation and drug development, in large part due to effective life-science policies, including significant federal investment in life-sciences basic research, robust intellectual property (IP) protections, effective technology transfer policies, investment incentives, and, importantly, drug pricing policies that enable companies to invest in high-risk drug development.

But if the story of the past decline, and even loss, of other critical U.S. industries provides any guide, loss of U.S. production will ultimately lead to the loss of innovation capabilities as well. It is not enough for the United States to lead in drug development, it must also at least hold its own in drug production. This is especially true given the coming challenge from China, which intends to dominate the global drug industry, at all phases, from innovation to production to marketing.

Now is not the time for free-market complacency, hoping that America’s entrepreneurial spirit and rule of law will somehow suffice (the United States didn’t gain its biopharma lead from a laissez faire approach, and it certainly won’t keep its lead with it alone). Nor is it the time for drug populism, a political movement that both sides of the aisle, but especially progressives, have unfortunately embraced. Drug populism and its accompanying policies of weaker IP protections and draconian drug price controls would likely result in cheaper drugs. But there should be no confusion that it will lead to a hollowing out of U.S. capabilities, not just in production but also in innovation (and, not to mention, fewer new lifesaving drugs). If the United States is serious about competitiveness overall, and competitiveness in the biopharma sector specifically, an industry that the United States still has strong capabilities in—unlike the telecom equipment or flat-panel display industries, to name just two—then it’s time for Washington to articulate and embrace a robust national biopharmaceutical competitiveness strategy.

#### Chinese tech leadership causes nuke war

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Rather, we should think more broadly about how new technology might affect global politics, and, for this, it is helpful to turn to scholarly international relations theory. The dominant theory of the causes of war in the academy is the “bargaining model of war.” This theory identifies rapid shifts in the balance of power as a primary cause of conflict.

International politics often presents states with conflicts that they can settle through peaceful bargaining, but when bargaining breaks down, war results. Shifts in the balance of power are problematic because they undermine effective bargaining. After all, why agree to a deal today if your bargaining position will be stronger tomorrow? And, a clear understanding of the military balance of power can contribute to peace. (Why start a war you are likely to lose?) But shifts in the balance of power muddy understandings of which states have the advantage.

You may see where this is going. New technologies threaten to create potentially destabilizing shifts in the balance of power.

For decades, stability in Europe and Asia has been supported by US military power. In recent years, however, the balance of power in Asia has begun to shift, as China has increased its military capabilities. Already, Beijing has become more assertive in the region, claiming contested territory in the South China Sea. And the results of Russia’s military modernization have been on full display in its ongoing intervention in Ukraine.

Moreover, China may have the lead over the United States in emerging technologies that could be decisive for the future of military acquisitions and warfare, including 3D printing, hypersonic missiles, quantum computing, 5G wireless connectivity, and artificial intelligence (AI). And Russian President Vladimir Putin is building new unmanned vehicles while ominously declaring, “Whoever leads in AI will rule the world.”

If China or Russia are able to incorporate new technologies into their militaries before the United States, then this could lead to the kind of rapid shift in the balance of power that often causes war.

If Beijing believes emerging technologies provide it with a newfound, local military advantage over the United States, for example, it may be more willing than previously to initiate conflict over Taiwan. And if Putin thinks new tech has strengthened his hand, he may be more tempted to launch a Ukraine-style invasion of a NATO member.

Either scenario could bring these nuclear powers into direct conflict with the United States, and once nuclear armed states are at war, there is an inherent risk of nuclear conflict through limited nuclear war strategies, nuclear brinkmanship, or simple accident or inadvertent escalation.

This framing of the problem leads to a different set of policy implications. The concern is not simply technologies that threaten to undermine nuclear second-strike capabilities directly, but, rather, any technologies that can result in a meaningful shift in the broader balance of power. And the solution is not to preserve second-strike capabilities, but to preserve prevailing power balances more broadly.

## Case

### Uv

#### You get 1ar theory but its reasonability and not drop the debater -anything else allows the aff to infinitely contest any part of the 1nc and allows for the proliferation of theory args which destroys substantive engagement and clash – ow/s because education is the only terminal impact to debate that we can take out of round

### solvency

#### they don’t solve the vast majority of the aff – they are hyperspecific and none of their advantage is even about indigenous people so if they say that the link to anything is small you should be skeptical of their own solvency as well – so assign the vast majority of their offense near 0 risk

#### that also means you should reject the aff for their tokenizing of indigenous people – they solely include them on the backburner of the aff in order to preempt a reading of settler colonialism without any context or justification

#### antivaxers has no terminal impact

### adv 1

#### no terminal impact to this – 1ac read extinction ow/s for us so theres no reason why immorality has a huge terminal impact – that means that the risk of the da infinitely ow/s

### adv 2

#### diseases scenario –

#### Literally zero inherency, Moderna already released COVID Vaccine IP

**Moderna** On, **10-8-2020**, "Statement by Moderna on Intellectual Property Matters during the COVID-19 Pandemic," Moderna, Inc., <https://investors.modernatx.com/news-releases/news-release-details/statement-moderna-intellectual-property-matters-during-covid-19> *(Harker AM)*

Moderna is a pioneer in the development of messenger RNA (mRNA) vaccines and therapeutics. From its inception in 2010, Moderna saw the potential of this new class of medicines to make a significant difference in patients’ lives. With the support of our investors we have invested billions of dollars into research and development to make mRNA medicines a reality. One of the exciting discoveries advanced by Moderna was the combination of mRNA and lipid nanoparticles (LNPs) to make vaccines, and the demonstration of this potential in human clinical trials for eleven different infectious disease vaccines since 2015. Those discoveries and the expertise we developed have uniquely positioned Moderna to respond to the COVID-19 pandemic quickly. Information on our work toward a COVID-19 vaccine can be found here. As a company committed to innovation, Moderna recognizes that intellectual property rights play an important role in encouraging investment in research. Our portfolio of intellectual property is an important asset that will protect and enhance our ability to continue to invest in innovative medicines. A summary of our intellectual property can be found here. A selection of representative issued US patents relevant to our mRNA-1273 vaccine against COVID-19 is available here. Beyond Moderna’s vaccine, there are other COVID-19 vaccines in development that may use Moderna-patented technologies. We feel a special obligation under the current circumstances to use our resources to bring this pandemic to an end as quickly as possible. Accordingly, while the pandemic continues, Moderna will not enforce our COVID-19 related patents against those making vaccines intended to combat the pandemic. Further, to eliminate any perceived IP barriers to vaccine development during the pandemic period, upon request we are also willing to license our intellectual property for COVID-19 vaccines to others for the post pandemic period. Moderna is proud that its mRNA technology is poised to be used to help end the current pandemic.

#### Pfizer doesn’t enforce it’s patents on vaccine production for LDCS

**Pfizer 20** –Pfizer, Patent Rights. Issued by Policy, Public Affairs and Corporate Communications, Pfizer Inc. May 2020/ <https://cdn.pfizer.com/pfizercom/Patent-Rights-Final-May2020.pdf> *(Harker KB)*

Pfizer is committed to improving patient health and well-being at every stage of life. Meaningful patent protection worldwide encourages medical progress and further investment in the discovery and development of newer and more effective medicines and vaccines that address unmet medical needs of patients. Pfizer continuously reevaluates its patent filing strategy in all markets to ensure continued innovation and access to medicines for the benefit of patients. Enforcement of patent rights is driven by numerous factors particular to each case; however, Pfizer has a policy of patent non-enforcement in Least Developed Countries.

#### Disease doesn’t cause extinction

Adalja 16 [Amesh Adalja is an infectious-disease physician at the University of Pittsburgh. Why Hasn't Disease Wiped out the Human Race? June 17, 2016. https://www.theatlantic.com/health/archive/2016/06/infectious-diseases-extinction/487514/]

But when people ask me if I’m worried about infectious diseases, they’re often not asking about the threat to human lives; they’re asking about the threat to human life. With each outbreak of a headline-grabbing emerging infectious disease comes a fear of extinction itself. The fear envisions a large proportion of humans succumbing to infection, leaving no survivors or so few that the species can’t be sustained.

I’m not afraid of this apocalyptic scenario, but I do understand the impulse. Worry about the end is a quintessentially human trait. Thankfully, so is our resilience.

For most of mankind’s history, infectious diseases were the existential threat to humanity—and for good reason. They were quite successful at killing people: The 6th century’s Plague of Justinian knocked out an estimated 17 percent of the world’s population; the 14th century Black Death decimated a third of Europe; the 1918 influenza pandemic killed 5 percent of the world; malaria is estimated to have killed half of all humans who have ever lived.

Any yet, of course, humanity continued to flourish. Our species’ recent explosion in lifespan is almost exclusively the result of the control of infectious diseases through sanitation, vaccination, and antimicrobial therapies. Only in the modern era, in which many infectious diseases have been tamed in the industrial world, do people have the luxury of death from cancer, heart disease, or stroke in the 8th decade of life. Childhoods are free from watching siblings and friends die from outbreaks of typhoid, scarlet fever, smallpox, measles, and the like.

So what would it take for a disease to wipe out humanity now?

In Michael Crichton’s The Andromeda Strain, the canonical book in the disease-outbreak genre, an alien microbe threatens the human race with extinction, and humanity’s best minds are marshaled to combat the enemy organism. Fortunately, outside of fiction, there’s no reason to expect alien pathogens to wage war on the human race any time soon, and my analysis suggests that any real-life domestic microbe reaching an extinction level of threat probably is just as unlikely.

Any apocalyptic pathogen would need to possess a very special combination of two attributes. First, it would have to be so unfamiliar that no existing therapy or vaccine could be applied to it. Second, it would need to have a high and surreptitious transmissibility before symptoms occur. The first is essential because any microbe from a known class of pathogens would, by definition, have family members that could serve as models for containment and countermeasures. The second would allow the hypothetical disease to spread without being detected by even the most astute clinicians.

The three infectious diseases most likely to be considered extinction-level threats in the world today—influenza, HIV, and Ebola—don’t meet these two requirements. Influenza, for instance, despite its well-established ability to kill on a large scale, its contagiousness, and its unrivaled ability to shift and drift away from our vaccines, is still what I would call a “known unknown.” While there are many mysteries about how new flu strains emerge, from at least the time of Hippocrates, humans have been attuned to its risk. And in the modern era, a full-fledged industry of influenza preparedness exists, with effective vaccine strategies and antiviral therapies.

HIV, which has killed 39 million people over several decades, is similarly limited due to several factors. Most importantly, HIV’s dependency on blood and body fluid for transmission (similar to Ebola) requires intimate human-to-human contact, which limits contagion. Highly potent antiviral therapy allows most people to live normally with the disease, and a substantial group of the population has genetic mutations that render them impervious to infection in the first place. Lastly, simple prevention strategies such as needle exchange for injection drug users and barrier contraceptives—when available—can curtail transmission risk.

Ebola, for many of the same reasons as HIV as well as several others, also falls short of the mark. This is especially due to the fact that it spreads almost exclusively through people with easily recognizable symptoms, plus the taming of its once unfathomable 90 percent mortality rate by simple supportive care.

Beyond those three, every other known disease falls short of what seems required to wipe out humans—which is, of course, why we’re still here. And it’s not that diseases are ineffective. On the contrary, diseases’ failure to knock us out is a testament to just how resilient humans are. Part of our evolutionary heritage is our immune system, one of the most complex on the planet, even without the benefit of vaccines or the helping hand of antimicrobial drugs. This system, when viewed at a species level, can adapt to almost any enemy imaginable. Coupled to genetic variations amongst humans—which open up the possibility for a range of advantages, from imperviousness to infection to a tendency for mild symptoms—this adaptability ensures that almost any infectious disease onslaught will leave a large proportion of the population alive to rebuild, in contrast to the fictional Hollywood versions.

#### Biophysical limits to the effectiveness of a pathogen prevent extinction – the “perfect” pathogen doesn’t exist

Consiglio, Dave (Chemistry and Physics High School Teacher and Community College Professor BS Mich)“could-a-disease-wipe-out-humans-entirely”. 2017. <https://www.forbes.com/sites/quora/2017/12/07/could-a-disease-wipe-out-humans-entirely/#542f1bc88203> SP

What scenarios seem like they should kill everyone but actually won't? Disease. Everyone seems worried about a killer disease, be it HIV or Ebola or Flu or some unknown pathogen. But humans are going to be really hard to wipe out via disease. Why? Well, we have several things going for us: We have a massive population. PROMOTED We are geographically widespread. We are capable of eating nearly anything. We are reasonably diverse as a species. There are geographically and genetically isolated pockets of our population. Diseases require a vector to spread. Let’s say the perfect disease arose tomorrow: It kills two weeks after you get it, shows no symptoms until the last minute, is really easy to transmit, and we have very little immunity to it. It still doesn’t kill everyone. Native Greenlanders and the people in Antarctica and people on Navy submarines and the few random people who are immune, and park rangers all either never come into contact with an infected person or else are spared by a genetic fluke. We even have the International Space Station as a potential place to hide and wait for the epidemic to die down. In fairness, nearly everyone is dead in short order, but once the disease has run its course, the pathogen that causes it is also likely to be dead. The vast majority of pathogens don’t survive for long outside of their hosts. As such, once nearly everyone is dead and the survivors wait a bit, they’re unlikely to encounter live pathogen. As an added bonus, the few surviving people include many of the most naturally immune members of the (now mostly dead) population. Now, don’t get me wrong, this scenario would be catastrophic for humanity. 99.9% of us could die in this way. And it’s possible that the remaining humans would be so isolated as to be unable to find one another for the purposes of reproduction. But I doubt it. Humans are nothing if not fecund, and we have those submarines, boats, airplanes, etc. We will eventually come out from hiding, find that special someone, and breed our way out of trouble. It’s why we’re still around as a species - nothing stops us from making more humans.

#### russia module-

#### If conventional war with Russia started or was imminent, the US would use nukes first

Tong Zhao et al 18, fellow @ Carnegie, PhD in Science, Technology, and International Affairs @ Georgia Institute of Technology, MA in International Relations @ Tsinghua University, “Reducing the Risks of Nuclear Entanglement”, https://carnegieendowment.org/2018/09/12/reducing-risks-of-nuclear-entanglement-pub-77236

Chinese or Russian non-nuclear strikes against the United States could also spark escalation—a risk that has been overlooked since the Cold War—for reasons other than crisis instability. The risk would be most acute if China or Russia launched non-nuclear attacks against dual-use U.S. C3I assets (including early-warning and communication satellites, as well as ground-based radars and transmitters). Even if conducted exclusively for the purpose of winning (or at least not losing) a conventional war, such non-nuclear attacks could be misinterpreted by Washington as preparations for nuclear use. As a result, Washington might come to believe (wrongly) that it was about to become the victim of a nuclear attack—an effect termed misinterpreted warning. For example, China or Russia might attack U.S. early-warning satellites to enable their regional non-nuclear ballistic missiles (or, perhaps, non-nuclear ICBMs or boost-glide weapons in the future) to penetrate U.S. missile defenses. However, such an attack might be misinterpreted by the United States as an attempt to disable missile defenses designed to protect the homeland against limited nuclear strikes. Even if the United States did not believe that nuclear use by an adversary was imminent, it might still worry that non-nuclear strikes against its dual-use C3I assets could compromise its ability to limit the damage it would suffer if the war turned nuclear at some later point. Such damage-limitation operations, which are an acknowledged part of U.S. nuclear strategy, would probably involve nuclear or non-nuclear attacks on the adversary’s nuclear forces backed up by missile defenses. To have any chance of success, these operations would require very sophisticated C3I capabilities (to target mobile missiles, for example). Attacks on—or even perceived threats to—these C3I assets (many of which are dual use) could lead to concerns in Washington that, unless it took action now, effective damage limitation might be impossible—that is, the damage-limitation window might already have closed—if the war turned nuclear. The United States might respond to either of these concerns in ways that could further escalate the crisis. Washington would probably take steps to protect surviving C3I capabilities. It might, for example, attack anti-satellite weapons that were seen as particularly threatening. Such strikes could prove especially escalatory if they were conducted deeper inside the adversary’s borders than the United States had previously struck. Alternatively, or additionally, Washington might issue explicit or implicit nuclear threats against nuclear use or further attacks on C3I assets. In fact, the 2018 U.S. Nuclear Posture Review even goes so far as to threaten to use nuclear weapons in response to attacks on C3I assets. Risk mitigation will likely prove challenging. China may not want to disentangle its nuclear and non-nuclear forces because doing so might weaken its ability to deter U.S. attacks against the latter and because such disentanglement might prove challenging organizationally for the People’s Liberation Army Rocket Force (which operates China’s land-based nuclear forces). For Russia, the financial costs associated with disentanglement are likely to be a significant barrier. Moreover, inadvertent escalation is not generally regarded as a serious risk in China or Russia. Unfortunately, the belief that inadvertent escalation is unlikely actually makes it more probable because it leaves political and military leaders less inclined, in peacetime, to take steps that could mitigate the risks and more inclined, in wartime, to interpret ambiguous events in the worst possible light. Although there is more acceptance of the possibility of inadvertent escalation in the United States, there is little evidence that the U.S. government and military have fully factored the risks of entanglement into procurement policies and war planning. There is also little evidence that the administration of President Donald Trump is willing to invest significant political capital in reducing the risk of inadvertent escalation.

#### That initial strike will completely destroy their nuclear arsenal – solves the impact

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The US nuclear forces modernization program has been portrayed to the public as an effort to ensure the reliability and safety of warheads in the US nuclear arsenal, rather than to enhance their military capabilities. In reality, however, that program has implemented revolutionary new technologies that will vastly increase the targeting capability of the US ballistic missile arsenal. This increase in capability is astonishing—boosting the overall killing power of existing US ballistic missile forces by a factor of roughly three—and it creates exactly what one would expect to see, if a nuclear-armed state were planning to have the capacity to fight and win a nuclear war by disarming enemies with a surprise first strike. Because of improvements in the killing power of US submarine-launched ballistic missiles, those submarines now patrol with more than three times the number of warheads needed to destroy the entire fleet of Russian land-based missiles in their silos. US submarine-based missiles can carry multiple warheads, so hundreds of others, now in storage, could be added to the submarine-based missile force, making it all the more lethal. The revolutionary increase in the lethality of submarine-borne US nuclear forces comes from a “super-fuze” device that since 2009 has been incorporated into the Navy’s W76-1/Mk4A warhead as part of a decade-long life-extension program. We estimate that all warheads deployed on US ballistic missile submarines now have this fuzing capability. Because the innovations in the super-fuze appear, to the non-technical eye, to be minor, policymakers outside of the US government (and probably inside the government as well) have completely missed its revolutionary impact on military capabilities and its important implications for global security. Before the invention of this new fuzing mechanism, even the most accurate ballistic missile warheads might not detonate close enough to targets hardened against nuclear attack to destroy them. But the new super-fuze is designed to destroy fixed targets by detonating above and around a target in a much more effective way. Warheads that would otherwise overfly a target and land too far away will now, because of the new fuzing system, detonate above the target. FIGURE 1. The deployment of the new MC4700 arming, fuzing, and firing system on the W76-1/Mk4A significantly increases the number of hard target kill-capable warheads on US ballistic missile submarines. The result of this fuzing scheme is a significant increase in the probability that a warhead will explode close enough to destroy the target even though the accuracy of the missile-warhead system has itself not improved. As a consequence, the US submarine force today is much more capable than it was previously against hardened targets such as Russian ICBM silos. A decade ago, only about 20 percent of US submarine warheads had hard-target kill capability; today they all do. (See Figure 1.) This vast increase in US nuclear targeting capability, which has largely been concealed from the general public, has serious implications for strategic stability and perceptions of US nuclear strategy and intentions. Russian planners will almost surely see the advance in fuzing capability as empowering an increasingly feasible US preemptive nuclear strike capability—a capability that would require Russia to undertake countermeasures that would further increase the already dangerously high readiness of Russian nuclear forces. Tense nuclear postures based on worst-case planning assumptions already pose the possibility of a nuclear response to false warning of attack. The new kill capability created by super-fuzing increases the tension and the risk that US or Russian nuclear forces will be used in response to early warning of an attack—even when an attack has not occurred. The increased capability of the US submarine force will likely be seen as even more threatening because Russia does not have a functioning space-based infrared early warning system but relies primarily on ground-based early warning radars to detect a US missile attack. Since these radars cannot see over the horizon, Russia has less than half as much early-warning time as the United States. (The United States has about 30 minutes, Russia 15 minutes or less.) The inability of Russia to globally monitor missile launches from space means that Russian military and political leaders would have no “situational awareness” to help them assess whether an early-warning radar indication of a surprise attack is real or the result of a technical error. The combination of this lack of Russian situational awareness, dangerously short warning times, high-readiness alert postures, and the increasing US strike capacity has created a deeply destabilizing and dangerous strategic nuclear situation. When viewed in the alarming context of deteriorating political relations between Russia and the West, and the threats and counter-threats that are now becoming the norm for both sides in this evolving standoff, it may well be that the danger of an accident leading to nuclear war is as high now as it was in periods of peak crisis during the Cold War. How the new accuracy-enhancing fuze works. The significant increase in the ability of the W76-1/Mk4A warhead to destroy hardened targets—including Russian silo-based ICBMs—derives from a simple physical fact: Explosions that occur near and above the ground over a target can be lethal to it. This above-target area is known as a “lethal volume”; the detonation of a warhead of appropriate yield in this volume will result in the destruction of the target. The recognition that the killing power of the W76 warhead could be vastly increased by equipping it with a new fuze was discussed in a 1994 alternate warhead study conducted by the Defense and Energy departments. The study calculated the number of warheads that would be needed for the W76 to attack the Russian target base, if START II were implemented. At the time, W76/Mk4 warheads had a fixed height-of-burst fuze (meaning the fuze could not adjust its detonation at an optimal location if it were falling short or long of a target). With those fixed-height fuzes, submarine-launched nuclear missiles were mainly aimed at softer targets such as military bases. But the study found that an enhanced Mk4A reentry-body with a new fuze that provided for an adjustable height-of-burst as it arrives would have significant capabilities against harder targets, compared to warheads with the earlier fuzes. The study assumed that a smaller number of Mk4 nuclear warheads with higher killing power per warhead could cover the Russian target base and be more effective than multiple attacks on targets with less destructive warheads. In other words, an enhanced fuze would allow the United States to reduce the number of warheads on its ballistic missile submarines, but increase the targeting effectiveness of the fleet. Figure 2 illustrates the kill distribution of US submarine-launched nuclear missiles equipped with the earlier, fixed height-of-burst fuzes. The dome-shaped volume outlined in gray shows the lethal volume within which a 100-kiloton nuclear explosion will generate 10,000 pounds per square inch or more of blast pressure on the ground. In other words, if a target on the ground cannot survive a blast of 10,000 pounds per square inch or more, it will be destroyed if a 100-kt nuclear weapon detonates anywhere within that dome-shaped volume. To show the physical relationship of the lethal volume for a particular ground target of interest—in this case a Russian SS-18 ICBM silo—Figure 2 was drawn to scale. Also shown to scale is the approximate spread of warhead trajectories that correspond to a missile that is accurate to 100 meters, a miss distance roughly the same as what is achieved by the Trident II sea-launched ballistic missile. Miss distances are typically characterized in terms of a quantity called the “circular error probable,” or CEP, which is defined as the radius of a circle around the aim point within which half of the warheads aimed at a target are expected to impact. In the case of a Trident II 100-kt W76-1 ballistic missile warhead, the lethal distance on the ground and the CEP are roughly equal. As a result, roughly half of the warheads equipped with the old, fixed-height fuze system could be expected to fall close enough to detonate on the ground within the lethal range. The new super-fuze for W76-1/Mk4A has a flexible height-of-burst capability that enables it to detonate at any height within the lethal volume over a target. Figure 3 shows how the new fuze vastly increases the chances that the target will be destroyed, even though the arriving warheads have essentially the same ballistic accuracy. The super-fuze is designed to measure its altitude well before it arrives near the target and while it is still outside the atmosphere. This measurement would typically be taken at an altitude of 60 to 80 kilometers, where the effects of atmospheric drag are very small. At this point, the intended trajectory is known to very high precision before the warhead begins to substantially slow from atmospheric drag. If the warhead altitude measured by the super-fuze at that time were exactly equal to the altitude expected for the intended trajectory, the warhead would be exactly on target. But if the altitude were higher than expected, the warhead could be expected to hit beyond the intended aim point. Likewise, if the altitude is lower than that expected, the warhead would likely hit short of the intended aim point. Testing has established the statistical shape and orientation of the expected spread of warhead locations as they fly towards the target. In the case of Trident II, the spread of trajectories around the intended trajectory is so small that the best way to increase the chances of detonating inside the lethal volume is to intentionally shift the aim point slightly beyond the location of the target. (Note that the intended trajectory in Figure 3 is shifted slightly down range.) By shifting the aim point down range by a distance roughly equal to a CEP, warheads that would otherwise fall short or long of the target using the conventional Mk4 fuze instead will detonate—at different heights dictated by the super fuze—within the lethal volume above a target. This shift in the down-range aim point will result in a very high percentage of warheads that overfly the target detonating in the lethal volume. The end result is that with the new Mk4A super-fuze, a substantially higher percentage of launched warheads detonate inside the lethal volume, resulting in a considerable increase in the likelihood that the target is destroyed. The ultimate effect of the super fuze’s flexible burst-height capability is a significantly increased target kill probability of the new W76-1/Mk4A warhead compared with the conventional warhead of the same type. Figure 4 shows the probability that warheads will detonate close enough to destroy the ground-target for both the conventional fuze and the super-fuze. As can be seen from figure 4, the probability of kill using a submarine-launched warhead with the new super-fuze (W76-1/Mk4A) is about 0.86. This 86 percent probability is very close to what could be achieved using three warheads with conventional fuzes to attack the same target. To put it differently: In the case of the 100-kt Trident II warhead, the super fuze triples the killing power of the nuclear force it has been applied to. Many Russian targets are not hardened to 10,000 pounds per square inch blast overpressure. Figure 5 shows the same probability of kill curves for the case of a target that is only hard to 2,000 pounds per square inch or more of blast overpressure, which is the actual case for almost all targets hardened to nuclear attack—ICBMs and supporting command posts, hardened structures at strategic airbases, submarines at pierside or in protected tunnels, hardened command posts at road mobile missile bases and elsewhere, etc. In this case, the super-fuze achieves a probability of kill of about 0.99—or very near certainty. This case also is equivalent to achieving a probability of kill associated with using three warheads with a 0.83 probability to achieve a 0.99 probability of kill. The probability of kills revealed by figures 4 and 5 have enormous security ramifications. The US military assumes that Russian SS-18 and TOPOL missile silos are hardened to withstand a pressure of 10,000 pounds per square inch or more. Since with the new super-fuze, the probability of kill against these silos is near 0.9, the entire force of 100-kt W76-1/Mk4A Trident II warheads now “qualifies” for use against the hardest of Russian silos. This, in turn, means that essentially all of the higher-yield nuclear weapons (such as the W88/Mk5) that were formerly assigned to these Russian hard targets can now be focused on other, more demanding missions, including attacks against deeply-buried underground command facilities. In effect, the significant increase in the killing power of the W76 warhead allows the United States to use its submarine-based weapons more decisively in a wider range of missions than was the case before the introduction of this fuze. The history of the US super-fuze program. The super-fuze is officially known as the arming, fuzing and firing (AF&F) system. It consists of a fuze, an arming subsystem (which includes the radar), a firing subsystem, and a thermal battery that powers the system. The AF&F is located in the tip of the cone-shaped reentry body above the nuclear explosive package itself. The AF&F developed for the new W76-1/Mk4A is known as MC4700 and forms part of the W76 life-extension program intended to extend the service life of the W76—the most numerous warhead in the US stockpile—out to the time period 2040-2050. The new super-fuze uses a technology first deployed on the high-yield W88/Mk5 Trident II warhead. The Navy’s Strategic Systems Program contracted with the Lockheed Missile and Space Corporation in the early 1980s to develop a new fuze that included “a radar-updated, path-length compensating fuze … that could adjust for trajectory errors and significantly improve the ability to destroy a target. This was an early and sophisticated use of artificial intelligence in a weapon.” It was the radar-updated, path-length compensating fuze—combined with the increased accuracy of the Trident II missile—that gave an SLBM the ability to hold a hardened target at risk. Efforts to incorporate the W88/Mk5 fuze capability into the W76/Mk4 was part of the Energy Department’s Warhead Protection Program in the mid-1990s to permit “Mk5 fuzing functionality (including radar-updated path length fuzing, and radar proximity fuzing) as an option to replacement of the much smaller Mk4 AF&F,” according to the partially declassified 1996 Stockpile Stewardship and Management Plan (emphasis added). Apart from the inherent drive to improve military capabilities whenever possible, the motivation for increasing the target kill capability of the submarine-borne W76 was that the Air Force’s hard-target killer, the MX Peacekeeper ICBM, was scheduled to be retired under the START II treaty. The Navy only had 400 W88 hard-target kill warheads, so a decision was made to add the capability to the W76. In an article in April 1997, Strategic Systems Program director Rear Adm. George P. Nanos publicly explained that “just by changing the fuze in the Mk4 reentry body, you get a significant improvement. The Mk4, with a modified fuze and Trident II accuracy, can meet the original D5 [submarine-borne missile] hard target requirement,” [Nanos stated](https://fas.org/wp-content/uploads/sites/4/W76nanos.pdf). Later that same year, the Energy Department’s Stockpile Stewardship and Management Plan formally described the objective of the fuze modernization program “to enable W76 to take advantage of [the] higher accuracy of [the] D5 missile.” By 1998, the fuze modernization effort became a formal project, with five SLBM flight tests planned for 2001-2008. Full-scale production of the super-fuze equipped W76-1/Mk4A began in September 2008, with the first warhead delivered to the Navy in February 2009. By the end of 2016, roughly 1,200 of an estimated 1,600 planned W76-1/Mk4As had been produced, of which about 506 are currently deployed on ballistic missile submarines. The implications. The newly created capability to destroy Russian silo-based nuclear forces with 100-kt W76-1/Mk4A warheads—the most numerous in the US stockpile—vastly expands the nuclear warfighting capabilities of US nuclear forces. Since only part of the W76 force would be needed to eliminate Russia’s silo-based ICBMs, the United States will be left with an enormous number of higher-yield warheads that would then be available to be reprogrammed for other missions. Approximately 890 warheads are deployed on US ballistic missile submarines (506 W76-1/Mk4A and 384 W88/Mk5). Assuming that the 506 deployed W76-1s equipped with the super-fuze were used against Russian silo-based ICBMs, essentially all 136 Russian silo-based ICBMs could be potentially eliminated by attacking each silo with two W76-1 warheads—a total of 272 warheads. This would consume only 54 percent of the deployed W76-1 warheads, leaving roughly 234 of the 500 warheads free to be targeted on yet other installations. And hundreds of additional submarine warheads are in storage for increasing the missile warhead loading if so ordered. The Trident II missiles that are deployed today carry an average of four to five W76-1 warheads each. However, each missile could carry eight such warheads if the US were to suddenly decide to carry a maximum load of W76 warheads on its deployed Trident II ballistic missiles. And the missile was tested with up to 12 warheads. Essentially all the 384 W88 “heavy” Trident II warheads, with yields of 455 kt, would also be available for use against deeply-buried targets. In addition, about 400 Minuteman III warheads, with yields of about 300 kt, could be used to target hardened Russian targets. In all, the entire Russian silo-based forces could potentially be destroyed while leaving the US with 79 percent of its ballistic missile warheads unused. Even after Russia’s silo-based missiles were attacked, the US nuclear firepower remaining would be staggering—and certainly of concern to Russia or any other country worried about a US first strike. Because of the new kill capabilities of US submarine-launched ballistic missiles (SLBMs), the United States would be able to target huge portions of its nuclear force against non-hardened targets, the destruction of which would be crucial to a “successful” first strike. One such mission would likely involve the destruction of road-mobile ICBMs that had left their garrisons to hide in Russia’s vast forests in anticipation of attack. The garrisons and their support facilities would probably be destroyed quickly, and some of the dispersed road-mobile launchers would also be quickly destroyed as they were in the process of dispersing. To destroy or expose the remaining launchers, United States planners would have the nuclear forces needed to undertake truly scorched-earth tactics: Just 125 US Minuteman III warheads could set fire to some 8,000 square miles of forest area where the road-mobile missiles are most likely to be deployed. This would be the equivalent of a circular area with a diameter of 100 miles. Such an attack would be potentially aimed at destroying all road-mobile launchers either as they disperse or after they have taken up position some short distance from roads that give them access to forested areas. Many of the nearly 300 remaining deployed W76 warheads could be used to attack all command posts associated with Russian ICBMs. A very small number of Russia’s major leadership command posts are deeply buried, to protect them from direct destruction by nuclear attack. The US military would likely reserve the highest-yield warheads for those targets. Figure 7 below shows an example of a structure that is roughly the size of the US Capitol building that is postulated to have rooms and tunnels as deep as 800 feet or more. Shelters that have rooms and tunnels at even greater depths could be sealed by using multiple nuclear warheads to crater every location where an entrance or exit might conceivably have been built.

#### Otherwise, Russia will broadly scale up military AI – extinction

Mike Rogers 17, former US Representative from Michigan, chairman of the House Permanent Select Committee on Intelligence, "Artificial intelligence — the arms race we may not be able to control", TheHill, https://thehill.com/opinion/technology/351725-artificial-intelligence-is-the-new-arms-race-we-may-not-be-able-to-control

“Whoever becomes the leader in this sphere will become ruler of the world,” [said](https://www.theverge.com/2017/9/4/16251226/russia-ai-putin-rule-the-world) Vladimir Putin. The sphere the President of Russia is referring to is artificial intelligence (AI) and his comments should give you a moment of pause. Addressing students at the beginning of our Labor Day weekend, Putin remarked “Artificial intelligence is the future, not only for Russia, but for all humankind,” adding, “It comes with colossal opportunities, but also threats that are difficult to predict.” For once, I find myself in agreement with the President of Russia, but just this once. Artificial Intelligence offers incredible promise and peril. Nowhere is this clearer than in the realm of national security. Today un-crewed systems are a fact of modern warfare. Nearly every country is adopting systems where personnel are far removed from the conflict and wage war by remote control. AI [stands](https://www.nytimes.com/2016/10/26/us/pentagon-artificial-intelligence-terminator.html) to sever that ground connection. Imagine a fully autonomous Predator or Reaper drone. Managed by an AI system, the drone could identify targets, determine their legitimacy, and conduct a strike all without human intervention. Indeed, the Ministry of Defence of the United Kingdom issued a press [statement](https://www.theverge.com/2017/9/12/16286580/uk-government-killer-robots-drones-weapons) in September that the country “does not possess fully autonomous weapon systems and has no intention of developing them,” and that its weapons systems “will always be under control as an absolute guarantee of human oversight and authority and accountability.” Let’s think smaller. Imagine a tiny insect-sized drone loaded with explosive. Guided by a [pre-programmed AI](https://www.amazon.com/Life-3-0-Being-Artificial-Intelligence/dp/1101946598), it could hunt down a specific target — a politician, a general, or an opposition figure — determine when to strike, how to strike, and if to strike based on its own learning. Howard Hughes Medical Center [recently](https://qz.com/1000011/scientists-attached-an-electronic-backpack-to-a-genetically-modified-dragonfly-and-turned-it-into-a-drone/) attached a backpack to a genetically modified dragonfly and flew it remotely. These examples are, however, where humans are involved and largely control the left and right limits of AI. Yet, there are examples of AI purposely and independently going beyond programed parameters. Rogue algorithms led to a [flash crash](http://gizmodo.com/rogue-algorithm-blamed-for-historic-crash-of-the-britis-1787523587) of the British Pound. In 2016, in-game AIs created super AIs weapons and [hunted down](http://www.kotaku.co.uk/2016/06/03/elites-ai-created-super-weapons-and-started-hunting-players-skynet-is-here) human players, and AIs have [created](https://www.forbes.com/sites/tonybradley/2017/07/31/facebook-ai-creates-its-own-language-in-creepy-preview-of-our-potential-future/#1cf69787292c) their own languages that were indecipherable to humans. AIs proved more effective than their human counterparts in producing and catching users in spear phishing programs. Not only did the AIs create more content, they successfully [captured](https://www.blackhat.com/docs/us-16/materials/us-16-Seymour-Tully-Weaponizing-Data-Science-For-Social-Engineering-Automated-E2E-Spear-Phishing-On-Twitter.pdf) more users with their deception. While seemingly simple and low stakes in nature, extrapolate these scenarios into more significant and risky areas and the consequences become much greater. Cybersecurity is no different. Today we are focused on the hackers, trolls, and cyber criminals (officially sanctioned and otherwise) who seek to penetrate our networks, steal our intellectual property, and leave behind malicious code for activation in the event of a conflict. Replace the individual with an AI and imagine how fast hacking takes place; networks against networks, at machine speed all without a human in the loop. Sound far-fetched? It’s not. In 2016, the Defense Advanced Research Projects Agency held an AI on AI capture the flag contest called the [Cyber Grand Challenge](https://www.youtube.com/watch?v=qSgYu3w3DMM) at the DEF CON event. AI networks against AI networks. In August of this year the founders of 116 AI and robotics companies signed a letter petitioning the United Nations [to ban](https://www.theverge.com/2017/8/21/16177828/killer-robots-ban-elon-musk-un-petition) lethal autonomous systems. Signatories to this letter included Google DeepMind’s co-founder Mustafa Suleyman and Elon Musk who, in response to Putin’s quote [tweeted](https://twitter.com/elonmusk/status/904638455761612800), “Competition for AI superiority at national level most likely cause of WW3 imo (sic)”. AI is not some far off future challenge. It is a challenge today and one with which we must grapple. I am in favor of fielding any system that enhances our national security, but we must have an open and honest conversation about the implications of AI, the consequences of which we do not, and may not, fully understand. This is not a new type of bullet or missile. This is a potentially fully autonomous system that even with human oversight and guidance will make its own decisions on the battlefield and in cyberspace. How can we ensure that the system does not escape our control? How can we prevent such systems from falling into the hands of terrorists or insurgents? Who controls the source code? How and can we build in so-called impenetrable kill switches? AI and AI-like systems are slowly being introduced into our arsenal. Our adversaries, China, Russia, and others are also introducing AI systems into their arsenals as well. Implementation is happening faster than our ability to fully comprehend the consequences. Putin’s new call spells out a new arms race. Rushing to AI weapon systems without guiding principles is a dangerous. It risks an escalation that we do not fully understand and may not be able to control. The cost of limiting AI intelligence being weaponized [could vastly exceed](https://www.belfercenter.org/sites/default/files/files/publication/AI%20NatSec%20-%20final.pdf) all of our nuclear proliferation efforts to date. More troubling, the consequences of failure are equally existential.