# MSDI Vaccine Funding Neg



## What’s all this?

<https://youtube.com/clip/UgkxnImOvt9q0jkYfqiTYcRbb3P4IkLPQ_NC>

Although MSDI’s primary CP focus is US unilateralism (a nice test of the topic’s NATO focus), a lot of the articles cut for this aff have CP potential to solve at least some specific parts of the 1AC. However, the week 1 debates should stick with the US unilateralism as the sole CP. Some of them could be framed as SQ solves.

Solid case turn options include NATO bad and Biotech bad, but recall that the aff is intended to maximize the benefits of biotech while also checking its drawbacks. It may take good analytical arguments and analysis of affirmative evidence to win a link to some biotech bad arguments.

Don’t be afraid to defend that current NATO leadership strategies may be sufficient to solve resilience without the plan. If they do and avoid linking to the DA you go for, it could be a good 2NR.

## Biotech

### Solvency

#### No solvency for dual use biotech regulation – information asymmetry turns the aff

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2.1. Predicament 1: The Information Asymmetry Risk of Dual-Use Biotechnology Keeps the

Traditional Self-Governance Model in the Field of Biotechnology from Playing Its Role In contrast to the field of nuclear technology, in the biological sciences, the autonomy of stakeholders is important [30]. The biotechnology industry has a long tradition of self-governance, and there are many historical success stories. However, the information asymmetry risk of dual-use biotechnology has caused problems for the traditional model of industry self-governance.

Dual-use risks of biotechnology show obvious characteristics of information asymmetry. Since the research and development environment and application scenario of dual-use biotechnology are concealed, anonymous and opaque, the public may not be able to ac- quire enough information about the dual-use risk of biotechnology. The two hidden risks of information asymmetry are as follows. The research of scientists who have mastered dual-use biotechnology cannot be monitored effectively by the institutions with which they are affiliated. This could pose risks to national biosafety and public safety. Moreover, is difficult to supervise the application of dual-use biotechnology in the early stages of disease diagnosis and treatment, as well as drug research and development. In response to these information asymmetry risks, professionals in the life sciences have always emphasized enhancing professional internal supervision mechanisms, but this may worsen information asymmetry. Researchers concerned with dual-use biotechnology acquire their professional skills in a closed environment, at scientific conferences, under the guidance of risk or ethics expert committees, and peer review of papers submitted for publication. All of these have formed an enclosed internal supervision mechanism for research, training and practice. These monitoring mechanisms determine that the identification and judgment of dual-use risks of biotechnology depend on the expert group from within the system, which may have some negative effects. For example, the internal standards and operational mechanisms within the scientific community may exclude the concerns, doubts and interventions of the government and the public. Even the judicial system, as a third party with traditional punitive capability, should rely on the judgment standards and operational systems established by the life science community in resolving legal disputes caused by the misuse of dual-use biotechnology.

Furthermore, biotechnology implementers who tend to be self-governing within the industry will resort to information asymmetry to deliberately resist the design of the public power system, which exacerbates the dual-use risks of biotechnology. Some biological scientists reject the top-down public power supervision system, which is most obvious in the field of synthetic biology research. Some technical experts in this field believe that supervision by public authorities can’t keep up with the pace of technological change, and that the bottom-up industry self-regulation is superior to the traditional “hard law” in terms of time cost, and will be less likely to be resisted by practitioners [31]. However, bottom-up industry self-regulation, or other self-regulation modes, have failed to regulate the malicious abuse of the synthetic technology of known pathogenic viruses. It is also difficult for such self-regulation models to accommodate the greater risks caused by the creation of synthetic organisms based on standardized component methods. In addition, excessive reliance on industry self-regulation will easily lead to the public’s misunderstanding of biotechnology development. Thus, the public may tend to believe that biotechnology development will undermine social consensus on biotechnology development and restrict the sustained and rapid progress of biotechnology if scientists assume certain technological risks after taking internal decisions to lift restrictions in some areas of research without having arrived and an informed consensus with the public. The public can do nothing except express doubt in the technology once such risks arise.

The He Jiankui incident of 2018 was an international controversy for two reasons. He violated institutional and international research regulations when he applied CRISPERCas9 gene editing technology to editing human embryos, and he conducted his experiments while claiming to be working on a cure for AIDS. As the public expects diseases to be cured and people to live longer, the internal private domain in life sciences will contradict public opinions on safety risk management and control. In a larger sense, different stakeholders have different understandings of and demands for the risks of dual-use biotechnology among biological scientists, social science experts, industries, media and the public.

#### mRNA administration is difficult (possible PICs)

Muhammad Yasir Khan , 7-9-2021, King AbdulAziz U – BioScience Dept & King Fahad Medical Research Center (also Mohammed Alsaadi, Khalid Alghamdi and Ishtiaq Qadri) https://biomedres.us/fulltexts/BJSTR.MS.ID.005949.php, "Biotechnology and Its Applications in Vaccine Development," Biomedical Journal of Scientific & Technical Research July, 2021, Volume 37, 1 (ermo/sms, Acc:6-8-2022)

Messenger RNA Vaccine

The role of messenger RNA (mRNA) in the cell is to synthesize protein (translation). In mRNA vaccine, the strand codes for disease specific proteins and are expressed on surface of cells. After expression of specific disease-causing antigen of cell surface the immune response is generated. mRNA vaccine is novel, safe and less expensive method as compared to conventional vaccines. The administration of mRNA vaccine remains a challenge for scientist because of stability and other pharmacological features.

There are three types of mRNA vaccines i.e,

Non-Replicating mRNA: The mRNA is injected in body where it is taken up by cells and express the antigen.

In-Vitro Dendritic Cell Non-Replicating mRNA Vaccine: Dendritic cells present antigen on its surface for other types of cells could produce immune response. In this type of mRNA vaccine dendrtic cells are extracted from patients and the transfected in vitro with antigen and injected back to patient to stimulate immune response.

In-Vivo Self-Replicating mRNA: In this strategy the pathogen mRNA is packed with additional mRNA to make sure it is copied inside cell [19].

Currently a great deal of research is in progress in filed of mRNA vaccine for cancer as well as infectious diseases. A study by Brazzoli et al describe self-amplifying mRNA vaccine encoding influenza virus Hemagglutinin protein. The vaccine elicits humoral and cellular immune response in mice [19]. The administration of mRNA encoding light and heaving chain of anti-HIV antibody encapsulated in nanoparticles from mice ven being challenged [20].

#### Normal DNA vaccines ineffective

Muhammad Yasir Khan , 7-9-2021, King AbdulAziz U – BioScience Dept & King Fahad Medical Research Center (also Mohammed Alsaadi, Khalid Alghamdi and Ishtiaq Qadri) https://biomedres.us/fulltexts/BJSTR.MS.ID.005949.php, "Biotechnology and Its Applications in Vaccine Development," Biomedical Journal of Scientific & Technical Research July, 2021, Volume 37, 1 (ermo/sms, Acc:6-8-2022)

Deoxyribonucleic Acid Vaccines

Deoxyribonucleic acid (DNA) vaccines are basically genetically engineered DNA that when injected produce antigen and induce strong immune response. The gene responsible for immunogenic response is identified, cloned and then expressed in host by directly injecting it. DNA vaccines have higher immune response inducing potential as compared to conventional live attenuated or killed vaccine [13]. In 1990 DNA vaccines were coined for the first time when plasmid DNA was injected in muscle or skin and induce immune response against viral along with non-viral antigens. DNA vaccines were thought to hold very promising future [14] but till date no DNA vaccine for humans has been approved by FDA only animal vaccines are available like canine melanoma [15], vaccine for West Nile Virus in horses [16].

#### Direct “dual use biotech” fails – 22 agents/models are key – aff will miss some

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In the military field, “dual-use” biotechnology refers to both civilian and military technology [1]. In the civilian field, it refers to a legitimate scientific purpose that yields information or technologies that may be misused to pose a threat to public health or other aspects of national security [2]. Dual-use biotechnology has benefits (such as promoting scientific progress or improving public health) but also has the potential for malicious abuse or misuse (such as bioterrorism). At present, internationally recognized dual-use biotechnology consists of technology used for acquiring new types of biological or molecular materials (combinatorial chemistry and high throughput screening, DNA shuffling, and directed evolution), directed design technologies (protein engineering, virus genome synthesis, standardization in synthetic biology), technologies for manipulating biological systems (development of psychoactive drugs, synthesis of peptide bioregulators, immune regulation, personal genomics, RNA interference, transcranial magnetic stimulation), and technologies for the packaging and delivery (chemical micro-processing equipment, gene therapy, aerosol vaccine). Tucker lists three characteristics of dual-use: (1) its technical attributes, including availability, abuse susceptibility and potential harm caused by abuse; (2) its controllability, including concretization (the materialization of technology), maturity, convergence, development speed and international diffusion; and (3) the reducibility to the state, institutional, individual, product and knowledge levels [3]. However, due to its ubiquity, it is difficult to manage the risks of all dual-use biotechnologies. Therefore, NSABB has adopted a strategy of determining a limited scope of knowledge, products or technologies produced by life science research that is most likely to be misused to threaten national biosafety. This part of research is referred to as “dual-use research concerns”, and encompasses 15 key biological agents or toxins and seven types of dual-use research [4].

#### Panviral can’t solve – profit motives, drugs & testing

Jennifer Kahn 4-21-2020 UC Berkeley Graduate School of Journalism “How Scientists Could Stop the Next Pandemic Before It Starts” New York Times Magazine <https://www.nytimes.com/2020/04/21/magazine/pandemic-vaccine.html> (ermo/sms, Acc:6-22-2022)

But for years, Racaniello notes, the real obstacle to making panviral drugs or vaccines has been that no one was willing to pay for their development. For pharmaceutical companies, he points out, panviral vaccines are simply a terrible business proposition: Companies have to spend hundreds of millions of dollars to develop a shot that people will get once a year at most — and not at all in years when no particular disease is ascendant.

Panviral drug treatments are unprofitable for similar reasons. For one, the course of treatment is short, usually just a few weeks; for chronic diseases (diabetes, high blood pressure), patients take regimens of pills daily, often for years. (One person noted that Gilead’s stock price actually dropped after the company produced a revolutionary hepatitis C drug. Because the treatment completely cured patients, the market for it started to shrink, undermining the company’s bottom line.)

The other problem is that there’s currently no way to quickly test for most viruses, which is essential if a doctor wants to establish a diagnosis and prescribe the right drug. As a result, Racaniello says, it’s “a chicken-and-egg situation: No one is developing drugs for these viruses because there’s no way to test for them. And no one is developing tests, because there aren’t any drugs to prescribe.”

### Dual Use Defense

#### Unilateral and global mechanisms mitigate dual use biotech risks

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By the end of the 20th century, all countries had begun to pay attention to the four risks caused by dual-use biotechnology. In “Biotechnology, Weapons, and Humanity” (1999), the British Medical Association, for the first time in its history, expressed concern about the malicious abuse of genetic engineering, biotechnology and other emerging technologies, and suggested that social supervision should be strengthened and moral standards be established within the sciences to prevent the exacerbation of potential risks. In 2002, the Chinese government promulgated the “Regulations on Export Control of Dual-use Biological Products and Related Equipment and Technologies” to restrict the export of dual-use biological products and related equipment and technologies, to prevent them from being used to manufacture biological weapons [16]. In 2003, the National Academy of Sciences of the United States released a report, “Biotechnology Research in the Era of Terrorism” (the Fink Report), a pioneering document of the research into national security risks in the field of life science. The Fink Report identified seven types of biological experiments with dual-use risks, including microbiology and molecular biology experiments, which require safety inspections before project approval and funding [17]. To this end, the U.S. government set up a federal advisory committee under the National Biosafety Scientific Advisory Committee, which took charge of formulating policies and recommendations on dual-use research concerns (DURC) in life science research [2]. In 2004, the World Health Organization (WHO) announced that “every major new technology can be used not only for peaceful purposes, but also for hostile purposes. To tackle the common security challenges to all mankind, we should put the protection of biotechnology from being maliciously used above the security interests of all countries.” In 2009, the European Union passed Regulation No. 428/2009, which listed the controlled goods subject to export restrictions and licenses, including dual-use biological materials and production equipment [18]. In the same year, the Federation of American Societies for Experimental Biology (FASEB) warned that “scientists who educate their research on potential dual-use shall pay more attention to taking necessary safety control measures” [19].

Since 2011, countries have paid more attention to the dual-use of biotechnology. After the research results on genetic modification of H5N1, the highly pathogenic avian influenza virus published in “Nature” in September 2011 triggered global controversy. The United States issued several regulatory policies concerning dual-use biotechnology, including the “Regulatory Policy on Dual-use Life Science Research of the U.S. Government” (2012) by the National Science Advisory Board for Biosecurity (NSABB), and the “Regulatory Policy of Dual-Purpose Research Institutions in Life Sciences of the U.S. Government” (2013) by Office of Science and Technology Policy (OSTP) [20]. In 2014, NSABB halted research on the Gain of Function of highly pathogenic avian influenza H5N1, severe acute respiratory syndrome (SARS) and middle east respiratory syndrome (MERS) viruses, and required all independent and federal research institutions to strictly abide by the “Dual-use Research of Concern” (DURC) from 24 September 2015, and established a special entity review body, the IRE. In 2015, the U.S. government established the “Institutional Regulatory Policy Concerning Dual-use Research in Life Sciences” [21]. In 2018, the U.S. government issued a “National Biodefense Strategy,” and the National Academy of Sciences of the United States released the report “Biodefense in the Age of Synthetic Biology”, which emphasized the imminent threat of synthetic biotechnology being used as a virus weapon for terrorist activities by biohackers [22]. In 2017, the Chinese government issued “Safety Management Measures for Biotechnology Research and Development” to impose special control measures for biotechnology research and development activities with high risks of causing serious diseases in humans or animals [23].

While strengthening supervision at home, some countries have begun to mitigate the dual-use risks of biotechnology on international governance platforms. In 2016, the United States and Britain submitted Working Papers No. 10, No. 14, and No. 17 to the General Assembly at the Eighth Review Conference of the States Parties to the BWC. Germany submitted ‘Control Measures of Dual-use Materials’ at the preparatory meeting, which emphasized that the dual-use of new biotechnology poses a greater threat of large-scale epidemics and bioterrorism [24–27]. The management of dual-use risks of biotechnology was put on the international agenda and became a hot topic in the field of international arms control. To counter the possible abuse and misuse of biotechnology, Working Paper No. 30, jointly submitted by the Chinese and Pakistani governments, proposed the formulation of a model code of conduct for biological scientists. It would be binding upon all biological scientists worldwide when conducting biological research. In this important meeting, the state parties agreed to “encourage the promotion of a culture of responsibility amongst relevant national professionals and the voluntary development, adoption and promulgation of codes of conduct” [28]. At the international level, UN Security Council Resolution 1540 has been passed as the principled framework, BWC has been adopted as the basic norm, and international export control standards have been established by informal associations, including Australia Group and similar organizations.

These conventions and standards have been adopted by the international community, and have been enshrined in laws, regulations and operational mechanisms, including China’s “Regulations on Export Control of Dual-use Biological Products and Related Equipment and Technologies”, the U.S. “Regulations on Export Administration”, and Australia Group’s “Guiding Principles on Export Control of Biosensitive Items”.

#### Can’t weigh the dual use impact – risk predictions impossible

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2.2. Predicament 2: Top-Down Public Regulation often Lags behind Technological Iteration Due to Difficulty in the Prediction of Human-Made Risks of Dual-Use Biotechnology

It is difficult to predict the human-made risks of dual-use biotechnology before it has been used. According to Giddens, scientific and technological risk is a kind of “man-made risk” [32], and technology is neither good nor evil in itself. People use technology for good or evil purposes. Compared with the risk of public health and safety, the risk of biotechnological dual-use depends more on the intention and ability of its users. Therefore, the cause of biotechnology dual-use risk is stakeholders’ behavior out of control under the comprehensive influence of both the internal and external environment.

While human beings are innovating dual-use biotechnology, they are endeavoring to modify the rules that should apply to it. However, since the human-made risks of dual-use biotechnology cannot be predicted, since it is easy to find loopholes in rules and policies, and since traditional “hard law” and other governance rules are slow to adjust, governance innovation cannot keep up with technology. The hope is that once governance rules are established, they will be able to keep pace with technological changes by establishing a system of adaptive governance for continuous technology evaluation. With the development of dual-use biotechnology and the deepening understanding of its risks, these methods usually require a cycle of data collection, evaluation and rule modification [33]. In other words, new scientific discoveries and knowledge in other fields must be applied to the iterative decision-making of the dual-use risk of biotechnology [34]. However, such governance innovation ideas tend to challenge the scientific formulation of risk governance.

In summary, the risk of information asymmetry of dual-use biotechnology has placed the traditional biotechnology industry self-governance model in trouble; at the same time, the difficulty of predicting the human-made risks of dual-use biotechnology leads to public regulation lagging behind technical iteration. The result is failed governance of dual-use risks of biotechnology. In the 1920s, Ogburn observed that as technology advanced, people’s habits, thoughts and social arrangements fell behind, resulting in the decisive influence of technology on society [35]. The social reality since World War II has demonstrated that social harmony exists only in the minds of idealists. In contrast, heterogeneity is a basic feature of modern society. On this premise, the predicament of the management of dual-use risk of biotechnology reflects a failure in the checks and balances of the social governance structure. The risk governance rules cannot cover the blind spots of non-state actors and all biotechnology R and D and application scenarios. It is difficult for the system design mechanism to balance and coordinate the viewpoints and propositions in the life sciences and social sciences, in addition to finding a consensus among all parties. The balance between technology iteration and governance rules, and between private subjects’ demands and social consensus is consequently lost.

### Private Model Turns

#### Impact hub model emerging now – trades off with aff’s nation-state model

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In fact, a wide range of actors contributes to Gavi, which itself partners with local governments and nongovernmental organizations to distribute vaccines and run immunization programs. Even before the COVID-19 pandemic, Gavi had immunized nearly 900 million children against infectious diseases. It is an archetypal “impact hub,” an international initiative that assembles multiple actors from various sectors to make demonstrable progress toward solving a range of seemingly intractable global challenges.

Impact hubs such as Gavi offer a model for a new kind of international cooperation oriented around multistakeholder networks rather than nation states. They form the basis of what United Nations Secretary-General António Guterres calls “networked multilateralism,” in which member states—together with U.N. agencies, international financial institutions, businesses, philanthropic groups, regional and municipal governments, and civil society organizations—work together to fix the world’s most intractable problems.

To strengthen Gavi as an impact hub and demonstrate the efficacy of networked multilateralism, the United Nations should lead a fundraising effort to attract more contributions from the philanthropic and private sectors. Although a diverse array of organizations already contributes to Gavi, the total from these sectors is still relatively small—only $331 million. And nearly half of that comes from a single donor: the Bill & Melinda Gates Foundation.

There is a clear opportunity for the philanthropic and private sectors to step up. According to a UBS-led study, there are more than 260,000 foundations in 39 countries with combined assets of more than $1.5 trillion. The annual expenditures of all these foundations exceeds $150 billion per year, suggesting an opportunity to ramp up support considerably. The United Nations can also appeal to any of the nearly 6,000 corporations that signed on to the U.N. Global Compact, an agreement under which signatories commit to 10 sustainability principles. Even if only 30 of these companies committed $10 million each to Gavi, that would more than double the existing contribution total from the private and philanthropic sectors.

This shouldn’t be a hard sell. Fortune 500 companies spend $20 billion annually on corporate social responsibility efforts, an average of $40 million each. Global vaccination is an urgent, high-profile imperative, and contributing to it would burnish a company’s reputation and boost morale. In addition to it being the right thing to do, it is also profitable. The pandemic is costing global industries—from tourism and airlines to food services and retail—billions of dollars in lost revenue. Ultimately, global economic recovery hinges on vaccination. A corporation’s contribution is not so much a donation as an impact investment that will deliver both social and economic returns.

In leading such a major fundraising effort for COVID-19 vaccines, the United Nations would amplify networked multilateralism oriented around impact hubs, such as Gavi and other multi-actor partnerships that have proved success at scale. The effort could also draw inspiration from the COVID-19 Solidarity Response Fund established early on during the pandemic. Set up by the World Health Organization and United Nations Foundation, the fund crowdsourced donations to finance equitable access to COVID-19 treatment for the most vulnerable populations. In a short time span, it raised more than $250 million from 100 companies and 660,000 individuals in 190 countries.

A similar approach should be used for other goals besides the vaccination campaign. Building on the Global Compact on Refugees, for example, the U.N. High Commissioner for Refugees and the newly created Mayors Migration Council could scale up a global network of cities, businesses, and international organizations to help with refugee resettlement. Likewise, the United Nations Environmental Program could partner with the Global Covenant of Mayors for Climate and Energy, an alliance of more than 10,700 cities, to help fund and implement climate targets.

Ending the pandemic is just the first step to recovery. COVID-19 has triggered setbacks in virtually every one of the United Nations’ Sustainable Development Goals, from reducing poverty and inequality to improving health and education. The pandemic has also accelerated urgent security challenges, from digital harms to military confrontation. If the current system of global cooperation fails to help the world recover, grievances and mistrust toward the United Nations and member states will intensify. If the world is to build back better—and develop the capability to address the looming crises of the future—then impact hubs are needed.

#### CEPI 2.0 key to solve

Richard Hatchett & Morrison, 6-29-2021, CEO of the Coalition for Epidemic Preparedness Innovation, CEPI & former BARDA, acting director U.S. Biomedical Advanced Research and Development Authority, & J. Stephen Morrison, senior vice president here at the Center for Strategic and International Studies, CSIS

https://www.csis.org/analysis/cepi-20-critical-inflection-point, "CEPI 2.0: A Critical Inflection Point," No Publication (ermo/sms, Acc:6-20-2022)

Richard Hatchett, M.D.: Well, CEPI 2.0 is actually about the opportunities that have been created by the response to the pandemic. And it—Julie, when you started and were talking about CEPI’s creation and the idea that it was founded because there was a realization that there weren’t technical barriers or scientific barriers necessarily but there were funding barriers and there was an absence of political will. And I think we’re kind of in the same situation with respect to pandemic risk, in that we’re going to emerge from this pandemic with a whole suite of new tools and new technology platforms that have been validated and that have demonstrated that, you know, rapid vaccine development is possible.

And we actually know what we need to do to, you know, vastly improve the world’s preparedness for future pandemics, or even—I mean, vastly reduce the risk, or even potentially, you know, take pandemics off the table. I don’t think that’s as far-fetched as it might sound. And so what CEPI 2.0 is, or what we’ve put forward is a, you know, a proposal for the world. And then within that, CEPI has a role. And we’ve sketched out what we would do with, you know, if we were able to secure the resources.

And the $3.5 billion that we have talked about wouldn’t deliver, you know, a pandemic-free world. But what we think would, you know, what we think the world should do, if it can muster its political will, if it can muster the resources even in the midst of fighting the current pandemic but looking forward and take advantage of the opportunity, I mean, we think that we obviously need to finish the job on Covid. We need the generation 2.0 vaccines, and even generation 3.0—the oral vaccines and the mucosal vaccines.

We need to do everything that we can to take coronaviruses off the table. They are now—if anybody ever needed to argue that they were a pandemic threat before, we know they’re a pandemic threat now. And we know there are other coronaviruses out there. Looking at our experience, we broke every speed record in the development of vaccines for Covid, and it wasn’t fast enough. We need to dramatically shorten vaccine development times. And—

J. Stephen Morrison: This is where you get to your moonshot.

Richard Hatchett, M.D.: This is where you get to the 100-day goal. And then we need to break that down. I mean, we don’t just throw that out as an aspiration. We have to actually have an idea of how we go about doing that. And we’re looking at every step of vaccine development to think where we can achieve time savings. One of the most important places that we can achieve time savings is by being at least as prepared for future threats as we were actually prepared for Covid.

And that preparedness for Covid was based on concerns about coronaviruses and based on investments on understanding how to develop vaccines against SARS and MERS. And those investments paid off in spades during the response. And it essentially allowed new vaccines, which have now been shown to be 94-95 percent effective, to be designed, and I’m not speaking hyperbolically, literally within hours of getting the sequences. And we need to do all of this, you know, while laying the foundations for equity and leaving no one behind.

And so CEPI, in mapping out the 2.0 agenda, those are sort of the core components of the agenda. And it’s a shared agenda. It’s not something that CEPI’s going to own and go off and do by itself. It’s a proposal that we brought to the world, and which has been embraced by, you mentioned the United Kingdom. They’ve become a huge supporter of our efforts. And they have taken that core moonshot idea of the—

J. Stephen Morrison: And embraced it.

Richard Hatchett, M.D.: Embraced it. Took it to the G7, who welcomed it. And now we’re talking with the U.K., with the U.S., with other partners about how do we, you know, collectively, collaboratively, you know, bring that vision to pass?

#### CEPI moonshot internal

By, 4-13-2022, https://www.healio.com/news/infectious-disease/20220413/cepis-moon-shot-developing-pandemic-vaccines-in-100-days, "CEPI’s moon shot: Developing pandemic vaccines in 100 days," No Publication (ermo/sms, Acc:6-20-2022)

The Coalition for Epidemic Preparedness Innovations, or CEPI, launched a multi-billion dollar plan to accelerate the development and production of vaccines during the next pandemic, with a goal of making them available in just 100 days.

If the “100 Days Mission” is successful, it would far outpace the development and authorization of the world’s numerous COVID-19 vaccines, which took place in record time.

CEPI has said the plan will cost $3.5 billion — more than $1.5 billion of which has already been pledged by countries including Australia, Germany, Japan, Norway, the United Kingdom and the United States. Others, including the Bill & Melinda Gates Foundation and Wellcome Trust, also have pledged money.

Melanie Saville, MD, MSc, CEPI’s executive director of vaccine research and development, delivered remarks on the project during the Mary Lou Clements-Mann Memorial Lecture in Vaccine Sciences at the National Foundation for Infectious Diseases’ Annual Conference on Vaccine Research.

Saville noted the importance of real-time data and pandemic preparedness to make the goal a reality. Her presentation included several examples of how real-world and real-time data can contribute to controlling emerging diseases through vaccine development. One centered around chikungunya — a mosquito-borne disease that has caused major outbreaks in Africa, Asia and the Americas.

Chikungunya is on a list of CEPI’s priority diseases, along with MERS, Lassa fever, Nipah virus, Rift Valley fever, Ebola and the so-called “disease X” — a previously unknown pathogen, like SARS-CoV-2, that may emerge to cause a pandemic.

“It is very unpredictable as to where those outbreaks will occur, which is a major issue when you’re in the middle of vaccine development,” Saville said.

Saville and colleagues modeled a chikungunya outbreak to understand vaccine demand and what the potential impact of vaccines would be. Their main concentration was in Southeast Asia and India.

“When we looked at trying to predict how many doses you might need, the estimate was extremely broad, from 8,000 to 913 million doses per year,” Saville said. “It is really quite a challenge there.”

The researchers then looked at how vaccination could impact these outbreaks and found that it could reduce reported cases by approximately 50%.

“This, however, depends on a number of key parameters such as the threshold that triggers an outbreak response and how long it might really take to actually vaccinate the population or get immunity to an impactful level,” Saville said. “How will a vaccine ultimately be used for a disease like chikungunya? How can it be effectively used, and how will you use a stockpile in an outbreak situation? Where do you put that stockpile?”

According to Saville, the time from when the genetic sequence of SARS-CoV-2 was published to the first vaccine was 326 days.

“As you look at the data globally, during that time, when the first vaccine was made available, there were already 1.6 million deaths,” she said. “So, the question arises, ‘What if you could develop a vaccine in 100 days, when there were only 200,000 deaths?’”

CEPI said the 100-day plan includes “investing in research and development to combat those diseases most likely to cause epidemics and pandemics and reducing manufacturing complexity.”

Saville explained that knowing exactly what should trigger the start of vaccine development is paramount. Some of the components include confirmed human-to-human transmission, failure of control measures, high severity of diseases or death, and a new infectious disease pathogen being identified as the cause.

“Is this going to turn into something with high case fatality? If so, you cannot afford to wait,” she said. “What you need is to be already manufacturing doses of the vaccines to start clinical trials at a very early stage. ... If you wait and see what happens, you lose crucial time.”

#### Future pandemics inevitable – accelerated CEPI model dramatically cuts development time (CEPI as CP?)

Karen Gilchrist, 2-18-2022, CNBC London Correspondent, https://www.cnbc.com/2022/02/18/bill-gates-covid-risks-have-reduced-but-another-pandemic-will-come.html, “Bill Gates says Covid risks have ‘dramatically reduced’ but another pandemic is coming,” CNBC (ermo/sms, Acc:6-8-2022)

Bill Gates said Friday that the risks of severe disease from Covid-19 have “dramatically reduced” but another pandemic is all but certain.

Speaking to CNBC’s Hadley Gamble at Germany’s annual Munich Security Conference, Gates, co-chair of the Bill & Melinda Gates Foundation, said that a potential new pandemic would likely stem from a different pathogen to that of the coronavirus family.

But he added that advances in medical technology should help the world do a better job of fighting it — if investments are made now.

“We’ll have another pandemic. It will be a different pathogen next time,” Gates said.

Two years into the coronavirus pandemic, Gates said the worst effects have faded as huge swathes of the global population have gained some level of immunity. Its severity has also waned with the latest omicron variant.

However, Gates said that in many places that was due to virus itself, which creates a level of immunity, and has “done a better job of getting out to the world population than we have with vaccines.”

“The chance of severe disease, which is mainly associated with being elderly and having obesity or diabetes, those risks are now dramatically reduced because of that infection exposure,” he said.

Gates said it was already “too late” to reach the World Health Organization’s goal to vaccinate 70% of the global population by mid-2022. Currently 61.9% of the world population has received at least one dose of a Covid-19 vaccine.

He added that the world should move faster in the future to develop and distribute vaccines, calling on governments to invest now.

“Next time we should try and make it, instead of two years, we should make it more like six months,” Gates said, adding that standardized platforms, including messenger RNA (mRNA) technology, would make that possible.

“The cost of being ready for the next pandemic is not that large. It’s not like climate change. If we’re rational, yes, the next time we’ll catch it early.”

Gates, through the Bill & Melinda Gates Foundation, has partnered with the U.K.’s Wellcome Trust to donate $300 million to the Coalition for Epidemic Preparedness Innovations, which helped form the Covax program to deliver vaccines to low- and middle-income countries.

The CEPI is aiming to raise $3.5 billion in an effort cut the time required to develop a new vaccine to just 100 days.

### CRIPR Bad Turns

#### CRISPR off target turn

Marsha Greene & Zubin Master, 2018, Senior Policy Analyst, Peraton & Biomedical Ethics Research Program, Mayo Clinic, https://www.ndu.edu/Portals/59/Documents/Incoming/AY21%20Briefings/NDU%206070/CRISPR\_Military.pdf?ver=2020-08-11-170728-347, " Ethical Issues of Using CRISPR Technologies for Research on Military Enhancement" Journal of Bioethical Inquiry (ermo/sms, Acc:6-8-2022)

Considering that military service members already take significant risks simply by enlisting in the armed services, the risk/benefit analysis for research may be more favourable towards gene enhancement as the enhancement itself could improve the chances of survival during armed conflict (Annas and Annas 2009). Nevertheless, the risks of research must be addressed in a systematic manner to ensure that service members are not being exposed to unnecessary harm. Most concerning with gene editing research using CRISPR is the potential for off-target effects. If the CRISPR machinery accidentally docks at an unintended location in the genome it could cause mutations and disrupt or accelerate nontargeted biological processes thereby resulting in any number of illnesses, some of which may be life threatening. Nevertheless, the possibility of significant off target effects remains hypothetical. A recent report indicating that CRISPR gene editing had caused over one thousand single nucleotide mutations and over one hundred deletions was later retracted after heavy criticism of the scientific methods used and the validity of the paper’s conclusions (Schaefer et al. 2017; Wilson et al. 2017; Nature Methods, 2018). Nevertheless, our knowledge of biological processes and potential CRISPR effects remains limited. The risk–benefit calculus would require military IRBs to balance risks of off-target effects against the potential benefits of improved survival. The risks would be difficult to predict because more research on the frequency of off-target effects needs to be done in order to determine whether the benefits outweigh the risks. Risks may be minimized through preclinical experiments using robust animal models, reliable measures of off-target effects, and from an adequate understanding of how gene changes affect biological function. Risks may also be minimized if a reversible system was used.

#### CRISPR informed consent turn

Marsha Greene & Zubin Master, 2018, Senior Policy Analyst, Peraton & Biomedical Ethics Research Program, Mayo Clinic, https://www.ndu.edu/Portals/59/Documents/Incoming/AY21%20Briefings/NDU%206070/CRISPR\_Military.pdf?ver=2020-08-11-170728-347, " Ethical Issues of Using CRISPR Technologies for Research on Military Enhancement" Journal of Bioethical Inquiry (ermo/sms, Acc:6-8-2022)

Informed Consent

One of the factors of military life that impacts informed consent for research is the command structure. The military adheres to a single chain of command structure as outlined in the Joint Publication 1-02 (Gade 2015). The Uniform Code of Military Justice makes it a crime for a service member to disobey a lawful order from a superior commissioned officer, as such disobedience could jeopardize operational security and directly compromise the President’s directives (Katz 2000). It can be challenging for service members to break from the mould of this strict command structure even in the research setting. Thus, DoD Instruction 3216.02 requires that any research involving military personnel specifically excludes senior officers in the participant’s chain of command from solicitation, recruitment, or administering of informed consent. The responsibility of obtaining consent falls with the research team to ensure that this exclusion is enforced and that the autonomy and voluntariness of the research subject is protected at all times.

Another closely related factor of military training that presents a challenge to informed consent in the military setting is that service members are trained to act as a unit. This is based on several studies which positively tie unit cohesion to military performance (National Defense Research Institute 2010). Sometimes, recruitment efforts may target an entire unit and in such cases researchers may conduct group briefings. It can be especially challenging for an individual to not go along with an activity especially if a majority of the unit has decided to participate. This presents some difficulty in the informed consent process, especially in terms of undue pressure of group conformity. It may be that group recruitment activities within units or group briefings should be avoided for first-in-human CRISPR research for military enhancement. A focus on providing information to individuals in both written form i.e., education packets, in addition to discussing the research and answering questions through a gradual process may be important to help ensure potential subjects are adequately informed of the procedures, risks and benefits, ability to withdraw, and alternatives to study enrolment.

Attitudes regarding CRISPR gene editing and expectations among service members may also impact the informed consent process. Service members may be drawn to participate if they believe that the procedure could give them an advantage over the enemy or protect them from a terrorist attack. Further complicating the issue is that some research participants may have trouble grasping the basic concepts of genetics and gene therapy trials (Rose, Russo, and Wykes 2013). Often misconceptions exist regarding the intent of these types of trials. Deaths that have occurred during other human gene therapy trials highlight the disparity that often exists between goals of the research and participant expectations (Dresser 2009). Although personal benefit may be possible in early clinical trials, the main objective of first-in-human studies is to address safety. As such, a type of Btherapeutic misconception^ is likely to exist among military research subjects where CRISPR may protect them against harm from combat. Military IRBs will need to consider whether the benefits of improved performance are being overstated during informed consent to service members.

A final point to consider surrounding informed consent is the impact of the FDA’s newly adopted stance on expedited development of DoD medical products. During the first Gulf War, the FDA allowed the DoD to administer two experimental treatments to deploying service members to protect them against potential biochemical attacks (Boyce 2009). Practically speaking, no one can predict when war may break out. If a CRISPR based experimental treatment were developed enough for testing on service members but had not yet been approved for use, it would be impractical to obtain informed consent from every service member prior to deployment. Under the current regulations the product could be used under emergency situations or, depending on the stage of development, could be expedited. If some service members refused, then they could place themselves at risk of personal harm and jeopardize the success of a mission. Administering CRISPR gene editing prematurely could threaten service members’ safety, autonomy, ability to consent and whether they could opt out of these types of enhancements. This precedent could be important in genetics research as service members can conceivably be given orders, even against their wishes, if they are being sent to a war zone where biological weapons are being used. A cautionary approach to gene enhancement research using CRISPR may be prudent such that smaller scale testing can be done in controlled research settings prior to large-scale use and application during combat missions. Military leadership, IRBs, and the FDA must carefully evaluate unknown risks to soldiers and the risk of an unsuccessful mission if adequate human subjects research using the technology has not yet been performed.

#### CRISPR command structure turn

Marsha Greene & Zubin Master, 2018, Senior Policy Analyst, Peraton & Biomedical Ethics Research Program, Mayo Clinic, https://www.ndu.edu/Portals/59/Documents/Incoming/AY21%20Briefings/NDU%206070/CRISPR\_Military.pdf?ver=2020-08-11-170728-347, " Ethical Issues of Using CRISPR Technologies for Research on Military Enhancement" Journal of Bioethical Inquiry (ermo/sms, Acc:6-8-2022)

Inequality of Access

Inequality of access has been raised as a potential negative consequence of gene editing (Rabino 2003). The inequality of access argument against human gene enhancement could also apply in military settings (Amoroso and Wenger 2003). Uniformity is one mechanism the armed forces use to instil discipline and foster willingness to follow directions and is intimately tied to the chain of command structure. Due to the risks associated with gene enhancement research, first-in-human studies may be restricted to Special Forces personnel or those slated to participate in risky missions. If some deployed service members had enhancements and others did not, this could lead to dissent. Under the dissent rules, service members may refuse deployment claiming they have not been provided with the same level of protection as others. This could greatly hamper the success of missions. Even if a particular enhancement is given to an entire unit, temporary duty assignments or permanent change of stations could also create inequality within the forces and could disrupt the overall chain of command structure.

Another DoD regulation that may impact inequality of access to CRISPR research is whether the service member is on active duty. Military human subjects’ regulations prohibit active duty service members from being compensated for participating in research trials (DoDI 2002). Essentially if a service member is being paid by the DoD, they cannot simultaneously be compensated with additional funds through other DoD funding mechanisms for research purposes. A CRISPR trial designed to offer compensation may be viewed as an unfair incentive to service members who are on leave. Researchers may want to consider not offering compensation at all. If participation is limited to only service members on leave in order to offer fair compensation to all participants, military IRBs may need to consider whether this violates principles of fairness for all military research subjects.

### Militarization Turns

#### Biotech medical research risks weaponization

Ronit Langer & Shruti Sharma, 11-20-2020, Carnegie Endowment for International Peace (Technology and International Affairs Fellow & Technology and Society Sr. Research Analyst), https://carnegieendowment.org/2020/11/20/blessing-and-curse-of-biotechnology-primer-on-biosafety-and-biosecurity-pub-83252, "The Blessing and Curse of Biotechnology: A Primer on Biosafety and Biosecurity," (ermo/sms, Acc:6-8-2022)

The coronavirus pandemic has brought into sharp focus the possible benefits and potential pitfalls of biotechnology research. Although such research can be used to produce medical countermeasures to fight diseases and develop healthier crops and livestock, it can also be deployed to produce biological weapons. Even though the current pandemic, as argued by most scientific experts, is believed to have originated from natural sources, the origin of this particular pandemic does not rule out the possibility that other future infections could emerge from laboratories.

#### Gene therapy innovation should happen outside the military for ethical reasons

Peter H. Schwartz, April 2020, Indiana University Center for Bioethics, Indiana University School of Medicinehttps://www.cell.com/molecular-therapy-family/molecular-therapy/pdf/S1525-0016(20)30142-8.pdf, " Ethics of Gene Therapy in the Military: Promise and Potential Problems" Molecular Therapy Vol. 28 No 4 (ermo/sms, Acc:6-8-2022)

While certain enhancements are accepted in current medical practice, such as plastic surgery for appearance or botox for wrinkles, these cosmetic interventions are classified differently than most medical care, for instance not covered by health insurance. When proposed enhancements involve long-term medications or, worse, genetic modification, concerns grow, as can be seen with current programs in military enhancement, such as human-machine interfaces and neuroenhancement.8 The proposed gene therapy, in contrast, is more like a vaccine to protect against future illness (in this case caused by nerve agents rather than viruses).

The most important concerns about this gene therapy stem from its potential risks, much like for other new therapeutics. While being long-acting is a major point in the approach’s favor, this feature also brings potential dangers: scientists have already pointed out that the synthetic enzyme made by the gene could, by persisting in the blood stream, stimulate an immune response to the naturally occurring form, which is important in cholesterol metabolism.1 In addition, the fact that the treatment permanently modifies the individual’s genome raises the dangers of other long-term side effects, such as increasing cancer risk, which would be difficult to identify. The short-term benefits, one might hope, would make such longterm dangers acceptable, initially in research projects and then more generally in widespread use, but here things get complicated, in part because of the potential military use. For one thing, it can be difficult to carry out ethical clinical trials in the military, since military personnel may not feel as if they can choose to participate, due to command structure and culture.7,9

Perhaps even more importantly, since the treatment is preventative, it would presumably be used for all soldiers who have a significant risk of being exposed to nerve agents. But will the benefit to the potentially few soldiers who are actually exposed outweigh the risks to the many treated? Questions like this always arise for preventive interventions, such as screening tests: many people are tested and treated, but relatively few benefit. Groups such as the United States Preventive Services Task Force or American Cancer Society make recommendations by tallying up the benefits and risks at the population level.

Things are more complicated for a preventive treatment in the military, where the risk to the individual is affected by decisions by superior officers. Sending soldiers into a situation where chemical weapons may be used is slightly easier if the soldiers are at least somewhat protected. For this reason, the availability of the treatment might increase the risk to the individual soldier, on balance, by increasing the chance of their being exposed even as it reduces the harm from exposure. The treatment may thus more directly benefit military efficacy overall rather than individual soldiers.

These issues arise for all technological and medical means used to protect or treat soldiers. Think of everything from armored vehicles to the incredible advances in trauma medicine that have saved so many. All these advances are admirable and indispensable, but their availability may lead soldiers to be placed in situations with higher risk. When we start imagining making changes to soldiers’ DNA, changes that will last a lifetime, there are new, higher stakes.

Ruling on the ethics of gene therapy in the military, as for other technological advances, depends in part on judgments about how the technology or treatment will be used and for what ends. Even though the potential benefits to our soldiers and military understandably motivates this research, the first widespread uses of gene therapy may be more appropriately tested and implemented outside of the military.

#### No legal prohibition on DOD enhancement now

Marsha Greene & Zubin Master, 2018, Senior Policy Analyst, Peraton & Biomedical Ethics Research Program, Mayo Clinic, https://www.ndu.edu/Portals/59/Documents/Incoming/AY21%20Briefings/NDU%206070/CRISPR\_Military.pdf?ver=2020-08-11-170728-347, " Ethical Issues of Using CRISPR Technologies for Research on Military Enhancement" Journal of Bioethical Inquiry (ermo/sms, Acc:6-8-2022)

Currently, there is no specific regulation barring the enhancement of service members for military purposes although the Department’s current emphasis on optimization as opposed to enhancement suggests general weariness regarding permanent gene editing for service members. Nevertheless, research into human performance optimization and by extension biomedical enhancements is very active within the DoD (Land 2010; Jonas et al. 2010). As discussed, using CRISPR, it is possible to create semi-permanent gene enhancements. As public acceptability of gene editing for somatic versus germline therapies shifts (Scheufele et al. 2017), so may acceptance of somatic enhancements. It is thus conceivable that in the future, enhancements could become fully in compliance with the Department’s policies.

#### Genetic modification will dramatically increase ableism

Marsha Greene & Zubin Master, 2018, Senior Policy Analyst, Peraton & Biomedical Ethics Research Program, Mayo Clinic, https://www.ndu.edu/Portals/59/Documents/Incoming/AY21%20Briefings/NDU%206070/CRISPR\_Military.pdf?ver=2020-08-11-170728-347, " Ethical Issues of Using CRISPR Technologies for Research on Military Enhancement" Journal of Bioethical Inquiry (ermo/sms, Acc:6-8-2022)

CRISPR has revitalized the debate over human gene enhancement. In contemporary bioethics debates, a distinction between gene editing to treat or prevent disease and enhancement for non-health purposes is sometimes made with the latter being more strongly discouraged (Scheufele et al. 2017; Annas and Annas 2009; Ashcroft 2008; Amoroso and Wenger 2003). The distinction is meant to draw a line between practices that are considered morally permissible (gene editing for therapeutic purposes) versus those that are prohibitory (gene editing for enhancement) (Buchanan et al. 2000). Therapy is considered medically necessary in order to achieve normal function. But what is considered Bnormal^ function and what is Bpathological^ is susceptible to change. Yet in some cases, the moral difference between the therapy versus enhancement distinction becomes blurry. The classic example of two young boys both of whom are born with very short stature helps illustrate this point. Boy A is born short due to a deficiency in the human growth hormone (HGH) gene whereas Boy B is born short because both his parents are very short. Using CRISPR to correct the mutation in Boy A would be considered therapy because of a known gene defect whereas performing gene editing for Boy B would be considered enhancement because there is no clearly identifiable clinical pathology. Yet both Boy A and Boy B would suffer the social prejudice known as heightism, both desire to be taller, and both have very short statures due to a genetic lottery and to no fault of their own. In this situation, it would be ethically permissible to help both boys (Buchanan et al. 2000). Additionally, what may be considered an enhancement now might be considered treatment or routine care in the future (Frankel and Chapman 2000; Buchanan et al. 2000). In the above example, if we knew the specific set of genes making Boy B very short, this may be labelled as a pathology and thus could benefit from CRISPR therapy.

But there are valid reasons for maintaining the therapy/enhancement distinction including concerns that enhancement may be a form of a new, albeit softer, eugenics which likely furthers inequality among those who cannot afford to create children with enhanced traits (Frankel and Chapman 2000; Kiuru and Crystal 2008; Comfort 2015). The disability community finds the topic of gene modification particularly concerning. Many are concerned that the medical model characterizes disabilities as a medical problem that must be mitigated or eliminated (Generations Ahead 2010). Disability is a social construct with a socially dominant view that disabled people are unhappy and discounts the pride which people have in their disabilities and how it brings diverse and new perspectives to the world (Shakespeare 1995, 1998). Several in the disability community view genetic modification to rid disabilities in the world as highly discriminatory and argue that efforts towards such goals may increase social intolerance and further prejudice disabled persons.

There are, however, dissenting opinions as some argue enhancements are good for society and consider human enhancement a moral obligation (Savulescu 2005; Harris 2007). Based on the principle of procreative beneficence, Julian Savulescu argues that short of having competing interests, such as harm to a pregnant mother, parent(s) are obligated to have the most advantaged child, including by genetic enhancement (Savulescu 2001; Savulescu and Kahane 2009). Not all enhancements might be permissible, such as aesthetic ones like eye colour, but those that improve human flourishing, such as intelligence, would be allowed (Chan and Harris 2007).

For the purposes of our discussion here, we will not focus on the permissibility of enhancements in general or even for military purposes. Instead, we begin from the premise that CRISPR for military enhancement may be permitted and focus on outlining ethical issues surrounding risks and benefits to subjects, informed consent, and inequalities of access.

#### Public consultation / Recruiting CP

Marsha Greene & Zubin Master, 2018, Senior Policy Analyst, Peraton & Biomedical Ethics Research Program, Mayo Clinic, https://www.ndu.edu/Portals/59/Documents/Incoming/AY21%20Briefings/NDU%206070/CRISPR\_Military.pdf?ver=2020-08-11-170728-347, " Ethical Issues of Using CRISPR Technologies for Research on Military Enhancement" Journal of Bioethical Inquiry (ermo/sms, Acc:6-8-2022)

We conclude with two points. First is to encourage public and stakeholder engagement on the ethics of using CRISPR in military enhancement technology. Currently, public debate on the use of CRISPR for germline and enhancement purposes indicates that many in the public display concern about somatic and germline enhancements (McCaughey et al. 2016; Pew Research Center 2016; STAT-Harvard T.H. Chan School of Public Health 2016; Gaskell et al. 2017; Scheufele et al. 2017). These studies capture the views of different populations and vary in how questions are worded thereby accounting for some of the differences in opinions. But no study has yet to investigate the views of stakeholders on the use of CRISPR for enhancement for the purpose of protecting soldiers. Public and stakeholder views may differ when considering the use of CRISPR technology for military enhancement. Engagement within DoD and the public will help DoD research ethicists and leadership understand public and stakeholder concerns and be able to manage ethical issues of research involving military personnel as the research is translated into human applications. To promote discourse, several deliberative strategies and research methods could be employed including town hall meetings, citizen juries, consensus conferences, polling, and focus groups among others (Abelson et al. 2003). Deliberation can focus on a range of ethical questions such as how to translate CRISPR gene technology for military applications, how best to handle research ethics issues including informed consent and risk analysis for first-in-human studies, and when and how to best inform the public to ensure transparency of gene editing research.

The second point is that DoD should consider several research ethics issues as this technology moves forward. Gene editing is clearly advancing and as gene modification becomes accepted in military research, several considerations need to be made to minimize risks and ensure service members are appropriately informed should they become research participants. This will include taking steps to reduce the group pressure that could be a by-product of military cohesiveness training and making improvements in the consent process such that service members understand the risks and purpose of these interventions. The military will likely be watching the first-in-human trials very closely while simultaneously exhausting all preclinical options in order to fully evaluate the risks of off-target effects. There will need to be some certainty from further validated studies prior to initiating any wide-scale use for military applications. Additionally, researchers and military leadership alike will need to be cognizant of the potential for CRISPR applications to be deployed in the military setting prior to approval of these interventions by the FDA. Prior to invoking the Interim Rule due to a bioterrorist threat, several considerations need to be weighed to ensure appropriate protections to front line military personnel. From the DoD perspective, ensuring that service members have the best available protection in a war zone is paramount. However, this creates many ethical issues regarding breach of individual rights and autonomy. At the same time, a consideration could be that these risks are built into enlisting and recruiting discussions so that service members understand clearly that this is a possibility under certain scenarios. While the President’s Council in 2003 felt that the risks of using gene editing for military enhancement were too high, it remains unclear given scientific advancements in gene editing whether similar conclusions would be made.

#### EO subtracking funded now, post brink

Patrick Tucker, 12-1-2018, Technology Editor, https://www.defenseone.com/technology/2018/12/us-military-genetically-engineering-new-life-forms-detect-enemy-subs/153200/, "The US Military Is Genetically Engineering New Life Forms To Detect Enemy Subs," Defense One (ermo/sms, Acc:6-8-2022)

The Naval Research Laboratory, or NRL, is supporting the research. Here’s how it would work: You take an abundant sea organism, like Marinobacter, and change its genetic makeup to react to certain substances left by enemy vessels, divers, or equipment. These could be metals, fuel exhaust, human DNA, or some molecule that’s not found naturally in the ocean but is associated with, say, diesel-powered submarines. The reaction could take the form of electron loss, which could be detectable to friendly sub drones.

“In an engineered context, we might take the ability of the microbes to give up electrons, then use [those electrons] to talk to something like an autonomous vehicle. Then you can start imagining that you can create an electrical signal when the bacteria encounters some molecule in their environment,” NRL researcher Sarah Glaven said at a November event put on by the Johns Hopkins University’s Applied Physics Lab.

Glaven believes the research is about a year away from providing concrete evidence that she can engineer reactions in abundant marine life forms that could prove useful for the military. Sub-hunting, in particular, is “what we would like it to be applicable for,” she said.

“The reason we think we can accomplish this is because we have this vast database of info we’ve collected from growing these natural systems. So after experiments where we look at switching gene potential, gene expression, regulatory networks, we are finding these sensors,” said Glaven.

Geneticists have already shown that it’s possible to manipulate the genes of E. coli bacteria to exhibit all sorts of properties that might be useful for sub sensing. But, in synthetic biology, E.coli are similar to lab mice in conventional medical research: they’re abundant, cheap, and easy to work with, but their real-world relevance is limited. What works in E. coli, or in lab mice, doesn’t always work in other organisms and you just don’t find them in the sorts of places you would want to detect submarines.

There’s currently a $45 million effort across the Army, Navy and Air Force, dubbed the Applied Research for the Advancement of Science and Technology Priorities Program on Synthetic Biology for Military Environments, aimed at giving researchers the tools they need to engineer genetic responses into organisms that would be useful for the military.

### Singularity Turn

#### Turn – multitrack increases odds of success

Jocelyn Solis-Moreira 11-13-2021, New York-based health and science journalist with experience writing about medical research, mental health, and psychology. She has a degree in integrative neuroscience and a Master’s in psychology concentrating on behavioral neuroscience, Fact checked by Anna Guildford, Ph.D., https://www.medicalnewstoday.com/articles/how-did-we-develop-a-covid-19-vaccine-so-quickly, "COVID-19 vaccine: How was it developed so fast?," Medical News Today (ermo/sms, Acc:6-22-2022)

Funding for COVID-19 vaccine research

Vaccine research is costly. In 2018, a study in The Lancet Global HealthTrusted Source estimated the cost of early development and initial clinical safety trials for a typical vaccine to be in the range of $31–68 million. Large scale trials to determine the efficacy of a vaccine candidate would add to these figures.

In an accelerated timetable with a new coronavirus, this cost might be higher. For this reason, funding from sources ranging from the government to the private sector was critical in making COVID-19 vaccines.

In the United States, Operation Warp Speed (OWS)Trusted Source partnered with multiple institutions, including the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC), to develop, manufacture, and distribute 300 million doses by early 2021.

“By providing resources and assuming the financial risk, OWS allows companies to produce and stockpile vaccine doses even before the company knows if the vaccine is going to work,” said Dr. Yager.

“Also, by investing in multiple companies and vaccine platforms at once, OWS increased the odds of having a vaccine, or vaccines, available by the beginning of 2021,” he added.

The European Commission has also funded several vaccine candidates and worked with others in pledging $8 billion for COVID-19 research.

The United Kingdom government’s Vaccine Taskforce has also been a significant contributor to a wide variety of vaccine research. Recipients of this funding helped develop the AstraZeneca vaccine. The designers of this vaccine were the first to publish peer reviewed efficacy results from phase 3 trials.

### Dual Use Turns

#### Dual use biotech risks racial and insect pathogens

Yang Xue 1,2, Hanzhi Yu 3,\* and Geng Qin 3, 12-20-2021, 1 Law School, Tianjin University, Tianjin 300072, China; 2 Center for Biosafety Research and Strategy, Tianjin University, Tianjin 300072, China 3 School of Public Affairs, Zhejiang University, Hangzhou 310058, China; https://www.mdpi.com/2071-1050/13/24/14056/htm, "Towards Good Governance on Dual-Use Biotechnology for Global Sustainable Development," Sustainability Volume 13 Issue 24 10.3390/su132414056 (ermo/sms, Acc:6-22-2022)

Novel agent risks are the identification or development of new biological agents or toxins with the assistance of dual-use biotechnology. These risks also encompass “gain of function” research into pathogenic viruses, including combinatorial chemistry, high-throughput screening, DNA shuffling, directed evolution or protein engineering [3]. For example, gene editing technology, represented by CRISPER-Cas9, can greatly change the biological traits of pathogens, animals and plants, and even humans in a short time. Gene synthesis technology can artificially resurrect extinct pathogenic viruses, so that bacteria and viruses with higher pathogenicity can be synthesized, the receptors of which may have unprecedented biological characteristics [9]. In 2018, Canadian scientists obtained overlapping gene fragments through mail order, splicing them to synthesize a horse pox virus which was similar to the smallpox virus [10]. These artificially synthesized viruses are more capable of infecting, spreading, killing, and escaping than natural viruses, so it is more difficult to trace their origins. In addition, RNA interference and personal genomics, realized by gene driving technology, may not only be used as crowd-specific weapons to reduce human reproductive capacity and change the number of specific human populations, but also be used to manufacture insect weapons for transnational transmission of dengue fever, Zika, and other diseases.

#### Dual use biotech risks human rights violations

Yang Xue 1,2, Hanzhi Yu 3,\* and Geng Qin 3, 12-20-2021, 1 Law School, Tianjin University, Tianjin 300072, China; 2 Center for Biosafety Research and Strategy, Tianjin University, Tianjin 300072, China 3 School of Public Affairs, Zhejiang University, Hangzhou 310058, China; https://www.mdpi.com/2071-1050/13/24/14056/htm, "Towards Good Governance on Dual-Use Biotechnology for Global Sustainable Development," Sustainability Volume 13 Issue 24 10.3390/su132414056 (ermo/sms, Acc:6-22-2022)

Normative risks use dual-use biotechnology to destroy the framework of international biosafety governance conventions, including the Biological Weapons Convention (BWC). For example, new neuropeptide biological agents that can influence and manipulate specific wills or emotions have been manufactured. These agents can induce visual or auditory hallucinations, and cause disability or even extreme hysteria during interrogation, violating the human rights of detainees and breaking international humanitarian law. Normative risks also concern the self-regulation of scientists. In 2018, He Jiankui of China’s Southern University of Science and Technology created the world’s first gene-edited infant, in violation of the international regulation that “gene-edited early human embryos (within 14 days of age) and germ cells should not be used for pregnancy.” Normative risks also involve the application of dual-use biotechnology to existing international ethical principles and norms. He Jiankui violated the Helsinki Declaration, the International Ethical Guidelines for Biomedical Research Involving Human Subjects, and other international ethics, and principles and common views designed to “respect and protect subjects, maximize subject benefit and avoid subject injury as much as possible” [14].

#### Biotech experiments undermine anthropocentrism

Yang Xue 1,2, Hanzhi Yu 3,\* and Geng Qin 3, 12-20-2021, 1 Law School, Tianjin University, Tianjin 300072, China; 2 Center for Biosafety Research and Strategy, Tianjin University, Tianjin 300072, China 3 School of Public Affairs, Zhejiang University, Hangzhou 310058, China; https://www.mdpi.com/2071-1050/13/24/14056/htm, "Towards Good Governance on Dual-Use Biotechnology for Global Sustainable Development," Sustainability Volume 13 Issue 24 10.3390/su132414056 (ermo/sms, Acc:6-22-2022)

Although the public now has a clearer understanding of the risks posed by dual-use biotechnology, and the international community has made great efforts to mitigate those risks, disputes over safety and ethics are still common in formulating governance policies worldwide. In the field of stem cell research, the Japanese government revised its “Treatment Policy for Specific Embryos” in 2019, which approved research on cultivating human organs for transplantation in animals by implanting human stem cells into animal embryos. At the same time, it lifted restrictions on the termination of humananimal chimeric embryos within 14 days and restrictions on implanting those embryos into surrogate uteruses [29]. Such embryos may develop into human-animal chimeras, raising ethical disputes over the blurring of boundaries between human and non-human animals. The cause of the governance disputes is that dual-use biotechnology entails human-made risks that are difficult to control in addition to information asymmetry risks. As a result, the traditional self-governance of the biotechnology industry is placed in a predicament where it is difficult for governance models to keep up with the development of emerging technologies.

## NATO

### Solvency

#### Challenges beyond vaccine funding undermine NATO resilience

Jim Townsend, 10-14-2020, former deputy assistant secretary of defense for European and NATO policy and an adjunct senior fellow in the CNAS Transatlantic Security Program and Anca Agachi assistant director with the Foresight, Strategy and Risks (FSR) Initiative in the Atlantic Council's Scowcroft Center for Strategy and Security https://www.atlanticcouncil.org/content-series/nato20-2020/build-resilience-for-an-era-of-shocks/, "Build resilience for an era of shocks," Atlantic Council (ermo/sms, Acc:6-17-2022)

NATO and the Resilience Challenge

Resilience is enshrined in NATO’s DNA through Article 3 of the Washington Treaty,1 and has been developed through additional guidelines at NATO Summits, namely the 2016 baseline resilience guidelines (and associated 2017 evaluation criteria).2 These guidelines are meant to support continuity of government, the provision of essential services in member states, and civil support to the military, in the event of a major shock.3 While initially devised to prepare for traditional military attacks, recent events such as Russian hybrid activities and terrorist attacks have put a greater emphasis on civilian preparedness as a key component of resilience.4

However, as the COVID-19 pandemic has shown, NATO’s current resilience architecture cannot cope with multiple disruptive events, especially those of a non-traditional nature. In response to the pandemic, NATO jolted into action its emergency response capabilities to support allies with logistics and planning, set up field hospitals, transport patients, and disinfect public areas and border crossings.5 Allied institutions such as the Euro-Atlantic Disaster Response Coordination Centre (EADRCC) and the NATO Support and Procurement Agency (NSPA) helped to coordinate allied requests for supplies and made military assets available for the pandemic response. Even though NATO’s existing mechanisms helped member states respond to the crisis, they failed to achieve the fundamental aims of resilience: minimize damage, restore stability quickly, and catalyze improved strategies for similar challenges.6

The pandemic showed that NATO’s resilience framework suffers from several shortcomings. First, it is highly state-centric, while effective resilience-building measures should employ extensive cooperation with the private sector. Businesses, not governments, own many of the assets that could be deployed to respond to a major strategic shock. Further, civil society’s trust and cooperation is essential for any effective disaster response. Second, NATO’s current framework uses a traditional security lens, focuses on states first, and stipulates that the response to a threat should only take place once a certain level of risk has been met. However, the instability created by pandemics, climate change, or cyber-attacks is slow-moving, making long-term prevention a more effective strategy than crisis response. Finally, even though resilience has become increasingly relevant, it is still under-resourced. NATO does little to enforce investment levels or allocation of output, compared to traditional defense spending. Combined, these issues leave NATO with a weak mandate to task allies to enhance prevention and national preparedness, the inability to mitigate the deep and wide impact of non-traditional security threats, and insufficient capacity to manage and quickly scale a response to upcoming strategic shocks.

#### No resilience outside of EU

NATO, 6-17-2022, North Atlantic Treaty Organization, https://www.nato.int/cps/en/natohq/topics\_132722.htm, "Resilience and civil preparedness – Article 3 ," NATO (ermo/sms, Acc:6-17-2022)

Enhancing resilience and civil preparedness is also part of NATO’s support to partners and a way to project stability in the Alliance’s neighbourhood. Examples of practical cooperation include the deployment of teams of civil preparedness experts in support of Ukraine in 2014, Jordan in 2015 and Iraq in 2019. The cooperation with Jordan, which runs from 2019 until 2022, resulted in a joint United Nations-NATO three-year project to assist Jordan in improving its preparedness in the field of chemical, biological, radiological and nuclear (CBRN) weapons.

Continued engagement with the private sector and other international organisations like the European Union (EU) and the United Nations is also key to strengthening resilience, especially by developing shared situational awareness. The EU, in particular, remains a unique and essential partner for the Alliance, particularly through staff-to-staff consultations and practical cooperation in a number of resilience-related areas.

#### EU critical to solvency – NATO exclusivity fails

Jim Townsend, 10-14-2020, former deputy assistant secretary of defense for European and NATO policy and an adjunct senior fellow in the CNAS Transatlantic Security Program and Anca Agachi assistant director with the Foresight, Strategy and Risks (FSR) Initiative in the Atlantic Council's Scowcroft Center for Strategy and Security https://www.atlanticcouncil.org/content-series/nato20-2020/build-resilience-for-an-era-of-shocks/, "Build resilience for an era of shocks," Atlantic Council (ermo/sms, Acc:6-17-2022)

A New Conceptualization of Security

To meet this new security environment, NATO needs to help allies build a functional, forward-looking, and funded resilience architecture. To do so, the next NATO Strategic Concept should approve a fourth core task focused on resilience. This would allow the Alliance to help member states strengthen their resilience at home and acquire national (or NATO-owned) resources to assist each other in an emergency. This would prepare NATO to respond to upcoming non-traditional security threats while also reinforcing conventional defense and deterrence.

The new, strengthened resilience framework should be guided by several principles. NATO should continue to build on the concept of resilience as being on the “left side” of a shock7 and shape the security environment before another catastrophic event takes place. Second, this effort should be more holistic, looking beyond existing resilience baseline requirements to the protection of coastal areas, water management systems, etc., and enhancing cooperation with private sector stakeholders and civil society. Finally, NATO should conceptualize resilience as a peacetime effort, which empowers people and societies within member states to work together continuously to address sources of vulnerability, especially those areas below the threshold of the use of force.

In order to move forward, new ministerial guidance must be given to NATO headquarters to evaluate the cascading effects of non-traditional threats and assess NATO’s level of ambition in implementing this fourth core task.8 However, properly resourcing this new resilience framework will require the development of resilience capability goals for each ally to meet, at the national and collective level, as part of the NATO Defense Planning Process (NDPP). These goals should then be tailored to the needs of individual allies, allocated based on fair share and reasonable burden, and reviewed as part of a process that holds allies accountable to their commitments. Common funds can also help allies acquire NATO-owned assets when needed. Finally, the Framework Nations Concept could be used as a model for developing resilience capabilities.9

Because non-traditional threats require civil-military coordination, an emphasis on NATO-European Union (EU) cooperation should be at the heart of the Alliance’s efforts to deal with this adapted approach to the security environment. The European Union already has strategies and capabilities to prevent and address the underlying causes of strategic vulnerability, as well as immense civilian regulatory power in sectors ranging from energy to technology. Harnessing that capacity and aligning it with NATO’s goals is essential for a strong resilience framework. Therefore, the NATO-EU Joint Declaration of 201810 should be updated to include resilience in the face of non-traditional security threats, developed through cooperation on capability development and operational coordination. The updates might emphasize, among other issues, aligning investments in innovative green technologies (which can be transferred across the civil-military divide) and implementing common standards for public health trainings.

### Vaccine Nationalism Good Turn

#### Vaccine Nationalism good – cooperation empirically fails

John Kampfner, 6-30-2021 Executive Director, UK in the World Programme, https://www.chathamhouse.org/2021/06/vaccine-competition-may-now-be-worlds-best-bet, "Vaccine competition may now be the world’s best bet," Chatham House – International Affairs Think Tank (ermo/sms, Acc:6-19-2022)

Relations between the major powers are at their worst for decades with cooperation thin on the ground, and COVID-19 having deepened suspicions further.

In April, the US Senate passed the Strategic Competition Act with bipartisan support, promising to ‘counter the malign influence of the Chinese Communist Party globally’. In front of his American counterpart, China’s top foreign policy official denounced the effrontery of those who ‘smear’ Chinese democracy. Joe Biden calls Vladimir Putin ‘a killer’, while the Kremlin has put the US at the top of its list of unfriendly countries. Tension between China and India is high, the EU and UK are involved in repeated spats. Competition and mistrust are everywhere.

Far from producing greater collaboration in adversity, COVID-19 has exacerbated global rivalries. Given that the tensions long pre-dated the pandemic and are unlikely to improve any time soon, it is hard to see how the major powers can be persuaded to cooperate better to tackle this crisis. Coronavirus is just the first test. Other crises will follow.

President Biden calls the relationship with China ‘naturally competitive, sometimes adversarial and, on key issues, necessarily collaborative’. Managing these competing impulses is proving difficult to navigate. One route is the established one, focusing on international institutions and multilateral groups to tackle the big global challenges. In times of tension they have a restraining role; in times of cooperation, they can do so much more.

Yet, if the disappointing results of the G7 are anything to go by, expectations should be managed even lower than they are already. But there is another way. The present atmosphere of intense competition can actually be exploited to the advantage of developing economies\* .

Vaccine competition and the early hopes

A few weeks into the crisis, Ricardo Lagos, former president of Chile and a member of the Elders group of international leaders wrote: ‘Hopefully the international institutions will rise to the challenge of responding to this pandemic with the force that it demands, because this crisis will not be overcome by defeating the disease in any one country alone, but by guaranteeing an end to the affliction throughout the world.’

The first reaction of nation states was to protect their own, hoard, close borders – and indulge in nationalist points-scoring.

This has been a story of extraordinary scientific success and extraordinary political failure.

Robert Yates, Director, Global Health Programme; Executive Director, Centre for Universal Health, Chatham House

The more the US and its allies blamed China, both for the outbreak in Wuhan and for what many considered to be a cover-up, and the more China refused to provide the necessary access or information, the more distrustful and disjointed the global response became.

The final year of Donald Trump’s ‘America First’ presidency was characterized by a COVID-19 policy of denial, denigration of science and, at that point, the world’s highest infection rate. The president launched repeated broadsides against the World Health Organization (WHO), denouncing its Director General Tedros Ghebreyesus as a ‘puppet’ of China; he announced the termination of the US’s WHO membership and $400m annual payment, putting its finances in peril just at a time when the organization was most needed. Trump’s approach was borne partly of ideology, partly of a need to create a distraction from his administration’s incompetence.

Across the rich world, governments floundered in their initial response\* .

The medical and health community rallied early, creating an initiative designed to distribute vaccines, even as they were still in the early stage of development. The aim of COVAX was to produce and make available two billion vaccines by the end of 2021. ‘No-one is safe until everyone is safe’ became the mantra of collaboration.

Solidarity was not the problem among the organizations – Gavi, the global vaccine alliance, and the Coalition for Epidemic Preparedness Innovations (CEPI) worked with the WHO to get access to the COVID -19 Tools Accelerator, ACT-A, up and running.

COVAX was heralded as the ‘only truly global solution’, but it was a mix of ambition and acknowledgement of the limited commitment of the big powers to collaborate to vaccinate the world. Still, vaccinating ‘the priority fifth’ of the world’s population is better than nothing.

#### Vaccine Nationalism good – Latin America proves

John Kampfner, 6-30-2021 Executive Director, UK in the World Programme, https://www.chathamhouse.org/2021/06/vaccine-competition-may-now-be-worlds-best-bet, "Vaccine competition may now be the world’s best bet," Chatham House – International Affairs Think Tank (ermo/sms, Acc:6-19-2022)

Vaccine diplomacy and nationalism

From the start of the pandemic, in the provision of masks or personal protective equipment (PPE), nation states indulged their competitive instincts. Vaccine diplomacy and its alter ego vaccine nationalism followed this trend.

Public relations battles were fought out not just between rivals, but also among supposed allies. The British government juxtaposed its mass purchase of vaccines with the early failures of the European Union (EU) as vindication of Brexit. For its part, the EU’s definition of solidarity was largely confined to the bloc.

On taking office in January 2021, Biden proclaimed that ‘America is back’ in the mainstream of global affairs. He reversed the US decision to leave the WHO and turned around the domestic response with an impressively fast vaccination programme.

Yet the US rhetoric rarely matched the reality. Health policy was directed inwards: over-order on an industrial scale and vaccinate until the last person is done.

Americans went from near panic to enjoying an oversupply of life-saving medicine, while death rates in poorer countries were growing sharply with vaccines desperately hard to come by. The West failed egregiously in the competition for goodwill, leaving a gaping vacuum for others to fill.

China and Russia’s vaccine influence

In poorer regions, the vaccines of choice were Sinopharm and Sinovac of China and Sputnik-V of Russia. Choice is perhaps the wrong term; they were the only ones made available, even though the Chinese brands had not yet been certified for use by the WHO. The Russian one has still not been, although a peer-reviewed paper in the Lancet has demonstrated its efficacy and safety’.

Chinese vaccines were present in, or pledged to, 90 countries. Each shipment carried national flags and were accompanied by photo-opportunities with grateful local dignitaries at the airport of arrival.

By the end of May, China had sold or donated 700 million doses worldwide. Chinese vaccines were present in, or pledged to, 90 countries. Each shipment carried national flags and were accompanied by photo-opportunities with grateful local dignitaries at the airport of arrival. The biggest deals were geographically and politically disparate – from Chile to Egypt, Mexico to the Philippines. Russia was in 80 countries. As Champa Patel, director of Chatham House’s Asia-Pacific programme, notes: ‘Russia and China are not new actors on these continents and are sometimes capitalising on long-established political or economic relationships.’

The key question is why China and Russia were faster. China’s heavily enforced early lockdowns kept numbers at home far lower than elsewhere in the world. In Russia, COVID-19 spread rapidly but much of the public was wary of accepting the home-produced vaccine, leading to one of the lowest take-up rates among industrialized nations. At least that freed up stocks to enable the Kremlin to go on a global charm offensive.

The race for vaccine equity in Latin America

By late May, Latin America had exceeded one million deaths, the highest for any region in the world. The region was long considered to be the United States’ backyard. Frustrated at the lack of vaccines, several leaders took to social media diplomacy to ‘vaccine shame’ their traditional ally.

In March, president of the Dominican Republic Luis Abinader tweeted: ‘President @JoeBiden, less-developed countries and traditional allies of the USA, like Dominican Republic, have approved the AstraZeneca vaccine and we need it urgently’ while Paraguay was struggling to get Chinese vaccines because of its recognition of Taiwan.

Latin America didn’t help itself. ‘The region has failed to coordinate through existing mechanisms or to act as a bloc,’ says Chris Sabatini, senior fellow for Latin America at Chatham House. ‘Combined with the absence of the US, this has enabled others to fill the vacuum and split the region even more deeply.’

Shortly after delivering 400,000 doses to Bolivia, the Kremlin trumpeted access to its resources. ‘We are sure that Russian-Bolivian ties will expand, especially in sectors such as energy, mining and the peaceful use of nuclear technologies,’ Vladimir Putin said after meeting President Luis Arce. Bolivia has the world’s largest supply of lithium – an indispensable component in batteries for mobile phones – but has struggled to attract foreign investment to extract it.

What use is fraternity if now [the US] don’t give us a reply?

Euclides Acevedo, Foreign Minister of Paraguay

Goodwill was thin on the ground in contract negotiations. The Bureau of Investigative Journalism alleged in February that Pfizer had insisted to several Latin American governments that they put up sovereign assets such as embassy buildings and military bases as collateral against the cost of potential future legal cases.

Impact of vaccine nationalism in Africa

Africa has received two per cent of vaccines administered globally. The crisis was worsened by India’s decision to divert vaccines from the Serum Institute, the world’s largest vaccine manufacturing facility, which had been earmarked for export to deal with the country’s own COVID-19 emergency.

By May 2021, of 36 countries where death rates were rising, all but four were low- or middle-income countries. The cumulative effect has been to eradicate years of development, leading to a further division of wealth between nations and regions.

The African Union has set a goal of 40 per cent of vaccines to be produced on the continent within 20 years. Reforms such as these, vital though they are in the medium-term, will not alleviate the present crisis.

At first glance, the situation suggests a reversion back to the old paradigm of dependency. Yet there is another way of way of looking at Africa’s present predicament.

‘We are playing out the same thing again – but this time the politics are different,’ says Yates. This, he says, is reflected in the leadership of international agencies as three major UN institutions are now run by Africans. World Trade Organization (WTO) Director General Ngozi Okonjo-Iweala is a former Nigerian government minister; UNAIDS’ Executive Director Winnie Byanyima was a Ugandan MP who then ran Oxfam International. The head of the WHO, Tedros, was an Ethiopian minister.

Alex Vines, director of the Africa Programme, notes a series of regional summits with Africa planned for 2022 (several of which had been postponed because of the pandemic), including the EU, China and Turkey. Everyone is piling into Africa – and Africa knows it. ‘The trend is towards multi-polarity,’ he says.

Discussion of big-power winners and losers may actually be missing the point. This narrative assumes that recipient countries have little or no agency and are unable to disaggregate the various motivations and decide for themselves. Therefore, it may not feel like that now, as populations reel, but developing economies have more agency, more influence, than before.

#### Vaccine Nationalism good – rivalries help developing countries

John Kampfner, 6-30-2021 Executive Director, UK in the World Programme, https://www.chathamhouse.org/2021/06/vaccine-competition-may-now-be-worlds-best-bet, "Vaccine competition may now be the world’s best bet," Chatham House – International Affairs Think Tank (ermo/sms, Acc:6-19-2022)

Donating vaccines as an opportunity

Several Chatham House experts argue that if the US and its allies act quickly and deftly, they may be able to repair some of the damage. ‘Helping developing countries to vaccinate their populations represents a tremendous opportunity for the West to make up lost ground,’ Yates argues. ‘Not only will this potentially win over wavering non-aligned nations; it will accelerate the end of the pandemic and bring disproportionate benefits to their own economies as the world economy recovers.’

Vines says of Africa: ‘There is plenty of room left for the Americans to re-engage and be involved. This is also where the EU has a role.’ He adds: ‘African countries like choice.’

Perhaps developing countries can make a virtue of this unrelenting soft-power rivalry. Imagine a situation in which production increases and the competing powers vie to entice recipient countries. They would compete against each on the efficacy and reliability of vaccines, on cost and terms – and on geo-strategic allegiances.

Who cares where they come from or which political system they belong to if [the vaccines] save lives?

The Right Hon Lord O’Neill, Chair, Chatham House

‘Is it the end of the world if America, China and the others compete to ensure vaccinations?’ asks Chatham House chair Jim O’Neill, who has been on a number of inter-governmental preparatory groups for the G7 and G20.

This is not as it should be. In a perfect world, multilateral and cooperation would be the guiding principles. And where such collaboration exists, it should be promoted and pursued. But this crisis has shown the world at its most imperfect. If rivalry has to prevail, it can be turned around to the advantage of those who most need assistance.

### Specification Turn

#### Plan hurts resilience – its vaccine specificity disrupts the “all hazards”

NATO, 6-17-2022, North Atlantic Treaty Organization, https://www.nato.int/cps/en/natohq/topics\_132722.htm, "Resilience and civil preparedness – Article 3 ," NATO (ermo/sms, Acc:6-17-2022)

NATO’s work to improve resilience follows an all-hazards approach, not specific to any single vulnerability. It contributes to protecting Alliance territory and populations from all potential hazards. At the 2016 NATO Summit in Warsaw, Allied Leaders decided to boost NATO’s resilience to the full spectrum of threats and continue developing their countries’ individual and NATO’s collective capacity to resist any form of armed attack. They agreed seven baseline requirements for national resilience against which member states can measure their level of preparedness:

Assured continuity of government and critical government services: for instance the ability to make decisions, communicate them and enforce them in a crisis;

Resilient energy supplies: back-up plans and power grids, internally and across borders;

Ability to deal effectively with uncontrolled movement of people, and to de-conflict these movements from NATO’s military deployments;

Resilient food and water resources: ensuring these supplies are safe from disruption or sabotage;

Ability to deal with mass casualties and disruptive health crises: ensuring that civilian health systems can cope and that sufficient medical supplies are stocked and secure;

Resilient civil communications systems: ensuring that telecommunications and cyber networks function even under crisis conditions, with sufficient back-up capacity. This requirement was updated in November 2019 by NATO Defence Ministers, who stressed the need for reliable communications systems including 5G, robust options to restore these systems, priority access to national authorities in times of crisis, and the thorough assessments of all risks to communications systems;

Resilient transport systems: ensuring that NATO forces can move across Alliance territory rapidly and that civilian services can rely on transportation networks, even in a crisis.

These requirements reflect the three core functions of continuity of government, essential services to the population and civil support to the military, which must be maintained even under the most demanding circumstances. They are all connected, which means if one area is impacted, another may suffer as a result.

### Transparency Turn

#### NATO’s military focus suggests secrecy which increases hesitation, reduces vaccination

Jocelyn Solis-Moreira 11-13-2021, New York-based health and science journalist with experience writing about medical research, mental health, and psychology. She has a degree in integrative neuroscience and a Master’s in psychology concentrating on behavioral neuroscience, Fact checked by Anna Guildford, Ph.D., https://www.medicalnewstoday.com/articles/how-did-we-develop-a-covid-19-vaccine-so-quickly, "COVID-19 vaccine: How was it developed so fast?," Medical News Today (ermo/sms, Acc:6-22-2022)

Creating a vaccine in under 1 year is no small feat. While the coronavirus pandemic made a new normal of mask-wearing and physical distancing, it also spurred global cooperation for vaccine research and distribution.

However, a vaccine is only effective if people are willing to receive it. With rapid research development, some may be concerned that the vaccine was rushed, and with these concerns comes vaccine hesitancy.

A study that appeared in Nature MedicineTrusted Source in October 2020 surveyed 19 countries to investigate the acceptance of COVID-19 vaccines. The researchers found that only 71.5% of the respondents would consider taking a COVID-19 vaccine and that only 48.1% would take it if their employer recommended it.

By October 2021, healthcare workers had delivered more than 7 billion doses of the COVID-19 vaccine globally. However, vaccine hesitancy remains.

According to an ongoing Kaiser Family Foundation survey, 16% of respondents will “definitely not” get the vaccine.

Considering that the fastest vaccine — the mumps vaccine, which is now part of the MMR vaccine — took 4 years to develop, it is natural to have some apprehension over the safety and effectiveness of a new vaccine.

Dr. Sam Sun is a chief resident at Baylor College of Medicine in Houston and the director of the inDemic Foundation, a nonprofit organization that provides information about COVID-19.

He told Medical News Today that transparency throughout the vaccine process will be key to debunking misinformation and building the public’s trust.

#### Transparency impact – volunteers vital to rapid development – SQ path is moonshot now

Jocelyn Solis-Moreira 11-13-2021, New York-based health and science journalist with experience writing about medical research, mental health, and psychology. She has a degree in integrative neuroscience and a Master’s in psychology concentrating on behavioral neuroscience, Fact checked by Anna Guildford, Ph.D., https://www.medicalnewstoday.com/articles/how-did-we-develop-a-covid-19-vaccine-so-quickly, "COVID-19 vaccine: How was it developed so fast?," Medical News Today (ermo/sms, Acc:6-22-2022)

Rigorous guidelines for clinical trials

In the U.S., the FDATrusted Source meticulously reviews the data from each clinical trial phase before granting approval or, in the case of public health emergencies, emergency use authorization.

Dr. Kenyon said that before any clinical trial can start, a data monitoring and safety board must approve a study protocol.

A phase 1 trial focuses on the safety of the vaccine candidate. The researchers give escalating doses of the vaccine to healthy volunteers to determine side effects and tolerability.

Phase 2 trials expand their recruitment and may include participants with health conditions such as obesity, cancer, and diabetes. There is also active recruitment for participants of various demographics. The trial continues to test the safety of the vaccine and looks at the drug’s initial efficacy and how it affects the immune system.

Phase 3 trials recruit thousands of participants to measure the efficacy of the vaccine in preventing disease.

Clinical trials may combine their phases, which, according to Dr. Yager, is a common practice that is still held to the same ethical, scientific, and statistical standards as when each phase takes place separately. He explained:

“One potential benefit of combined trials, particularly in phase 2/3, is that since the vaccine is being evaluated in subgroups of individuals, results from the study expedite the identification of patient factors that impact vaccine safety or efficacy.”

Dr. Yager said that a major factor behind the rapid completion of clinical trials was a high interest in volunteers for vaccine studies. This helped enrollment goals for reaching thousands of people relatively quickly.

Another factor was the increased number of testing sites to facilitate enrollment and collect large amounts of data.

Safety monitoring after vaccination

Even after emergency use authorization has been granted, Dr. Kenyon said that the scientists will continue to collect safety data, as they will follow the participants for up to 2 years. This adds another layer of reassurance as a person shifts from a trial to a real-life setting.

“The trial is tens of thousands of participants, but for the vaccine program, you are getting into the millions. While unlikely, it may uncover any undetected toxicities that were not picked up by the trial.”

The CDCTrusted Source will monitor safety after vaccination for acute care and long-term care facilities through the National Healthcare Safety NetworkTrusted Source. For the general population, there is a smartphone application called V-safeTrusted Source.

“It is a smartphone-based system where you will be contacted actively by the CDC to see how you are doing after being vaccinated and [it will], therefore, pick up any adverse events that were not picked up in the trials,” Dr. Kenyon explained.

MNT takeaways

The pandemic has ushered in a new era of vaccine research. The combination of the global collaboration of scientists and the development of mRNA vaccines is akin to the “landing-on-the-moon moment,” according to Dr. Yager.

As COVID-19 cases continue to surge in many areas of the world, the challenge for widespread vaccine rollout will lie in its uptake by the public.

### Focus Turn

#### NATO focus should be limited to military personnel

Daniel Kochis, 5-5-2020, Senior Policy Analyst for European Affairs in the Margaret Thatcher Center for Freedom, of the Kathryn and Shelby Cullom Davis Institute for National Security and Foreign Policy, at The Heritage Foundation. Luke Coffey is Director of the Douglas and Sarah Allison Center for Foreign Policy of the Davis Institute. https://www.heritage.org/global-politics/report/natos-role-pandemic-response, "NATO’s Role in Pandemic Response," Heritage Foundation (ermo/sms, Acc:6-23-2022)

NATO Must Focus Its Attention on Two Key Tasks

As a military alliance, NATO’s responsibility during the coronavirus pandemic, as well as any future pandemics, is to ensure the readiness of Alliance forces to carry out combat operations at a moment’s notice. Under this guiding principle, there are two important areas where NATO and its member states should pay close attention when it comes to dealing with a global pandemic.

The Health and Welfare of Service Personnel and Their Families. This is the most important consideration for NATO during a global pandemic. An armed force that is medically unfit is useless. Also, soldiers who are deployed thousands of miles from home should not have to worry about the safety and health of their family members at home. They need to be 100 percent focused on the mission at hand. During an international pandemic, this is perhaps the single most important issue for armed forces.

As seen with the current pandemic, viruses do not discriminate between ranks. Inside NATO, two senior generals tested positive for COVID-19: the Chief of Staff of the Italian Army, Salvatore Farina, and the head of the Polish Armed Forces, Jarosław Mika. There was even at least one confirmed case of COVID-19 at NATO headquarters in Brussels. A large military base in northern Norway near the border with Russia was put on lockdown after a Norwegian soldier tested positive for the coronavirus, and another 1,300 soldiers were put into quarantine.

Maintaining Military Readiness. Militaries rely on training. If they cannot train, they will be less prepared to fight. As seen with the novel coronavirus, its spread throughout Europe has already affected readiness on both a strategic and a tactical level. On the strategic level, major NATO exercises were cancelled or curtailed. A major exercise in Norway focused on arctic security called “Exercise Cold Response 20” was cancelled. This exercise was supposed to involve 15,000 NATO troops. Another major exercise called “Defender Europe 20” was curtailed because of the coronavirus outbreak. This exercise was originally billed as the largest since the mid-1990s. On a positive note, at least the planning for these exercises has already happened, which in itself, is an important part of any training exercise. On the tactical level, if soldiers cannot do basic training, such as going to the rifle range because they are restricted to military bases or to the barracks, their readiness levels go down. This also leads to low morale.

### Ecology Focus Better for resilience

#### Environment focus prevents pandemics – better way to channel preparation

Jeremy Schwab, 8-1-2020, Boston University https://www.weforum.org/agenda/2020/08/pandemic-fight-costs-500x-more-than-preventing-one-futurity/, "Fighting COVID-19 could cost 500 times as much as pandemic prevention measures," World Economic Forum (ermo/sms, Acc:6-17-2022)

Significantly reducing transmission of new diseases from tropical forests would cost, globally, between $22.2 and $30.7 billion each year.

The COVID-19 pandemic will likely end up costing between $8.1 and $15.8 trillion globally.

The failure to protect tropical rainforests has cost trillions of dollars stemming from the coronavirus pandemic, according to new research.

The pandemic has wreaked economic havoc and caused historic levels of unemployment in the United States and around the world.

For decades, scientists and environmental activists have been trying to draw the world’s attention to the many harms caused by the rapid destruction of tropical forests.

One of these harms is the emergence of new diseases that are transmitted between wild animals and humans, either through direct contact or through contact with livestock that is then eaten by humans. The SARS-CoV-2 virus—which has so far infected more than 15 million people worldwide—appears to have been transmitted from bats to humans in China.

“Much of this traces back to our indifference about what has been occurring at the edges of tropical forests,” says Les Kaufman, a professor of biology at Boston University and coauthor of a policy brief in Science.

He recently brought together a team of researchers to better understand the economic costs of reducing transmission of viruses like the novel coronavirus. Looking at existing research, they made a startling realization.

The cost of the pandemic

They discovered that significantly reducing transmission of new diseases from tropical forests would cost, globally, between $22.2 and $30.7 billion each year. In stark contrast, they found that the COVID-19 pandemic will likely end up costing between $8.1 and $15.8 trillion globally—roughly 500 times as costly as what it would take to invest in proposed preventive measures.

To estimate the total financial cost of COVID-19, researchers included both the lost gross domestic product and the economic and workforce cost of hundreds of thousands of deaths worldwide.

The researchers say disease transmission from wild animals to humans occurs frequently near the edges of tropical forests, where human incursions increase the likelihood of contact with animals. These incursions take the form of logging, cattle ranching, and other livestock businesses, and the exotic animal trade, among others.

Tropical forests are often cut down in a patchwork or checkerboard pattern, increasing the amount of land that lies at the edges of the forest and thus increasing the risk for disease transmission between species that would normally live in different ecosystems.

Preventing new pandemics

To reduce disease transmission, Kaufman and his collaborators propose expanding wildlife trade monitoring programs, investing in efforts to end the wild meat trade in China, investing in policies to reduce deforestation by 40%, and fighting the transmission of disease from wild animals to livestock.

In China alone, wildlife farming (a government-monitored effort to sustainably hunt wild animals without overhunting them) is an approximately $20 billion industry, employing 15 million people, say Kaufman and his peers. In many communities in China, the purchase of wildlife and bushmeat—meat from wildlife species—is a status symbol.

The researchers also propose to increase funding for creating an open source library of the unique genetic signatures of known viruses, which could help quickly pinpoint the source of emerging diseases and catch them more quickly, before they can spread.

Every year, two new viruses are estimated to transfer from animals to humans, the researchers say. Historically, these have included HIV, MERS, SARS-CoV-1, H1N1, and most recently, the SARS-CoV-2 virus that causes COVID-19. Kaufman and his colleagues hope that their report will spur governments around the world, including the US government, to help fund these preventive measures.

There are some signs of hope, they say, including the February announcement by the Standing Committee of the National People’s Congress that wildlife consumption for food or related trade would be banned in China.

“The pandemic gives an incentive to do something addressing concerns that are immediate and threatening to individuals, and that’s what moves people,” says Kaufman.

“There are many people who might object to the United States fronting money, but it’s in our own best interest. Nothing seems more prudent than to give ourselves time to deal with this pandemic before the next one comes.”

#### NATO can better achieve resilience by focusing on climate instead of biotech

Jim Townsend, 10-14-2020, former deputy assistant secretary of defense for European and NATO policy and an adjunct senior fellow in the CNAS Transatlantic Security Program and Anca Agachi assistant director with the Foresight, Strategy and Risks (FSR) Initiative in the Atlantic Council's Scowcroft Center for Strategy and Security https://www.atlanticcouncil.org/content-series/nato20-2020/build-resilience-for-an-era-of-shocks/, "Build resilience for an era of shocks," Atlantic Council (ermo/sms, Acc:6-17-2022)

What would this look like in practice? Consider, for example, climate change—a non-traditional threat whose consequences will occur at far greater frequency than pandemics, and for which the Alliance should start preparing now. NATO should study the impact of climate change and its resulting crises on allied security, following the model of seminal studies like those by the Center for Naval Analysis.11 NATO should also examine its own impact on climate change and how the Alliance could minimize its environmental footprint. Instead of waiting to respond to extreme weather events and drought-enabled conflicts that may take place in allied countries, NATO could leverage its new core task and expanded NDPP to prepare for disaster by acquiring and building stockpiles of emergency equipment and necessary assets. Working alongside the EU and national emergency management agencies, NATO could help European allies plan measures ranging from decentralized energy systems to coastal hazard protection methods to blunt the impact of the next climate disaster. A consistent schedule of natural disaster training exercises would guarantee that when a crisis does occur, clear responsibilities and required information exist within the system, including a defined role for NATO. Finally, a reinforced EADRCC should help coordinate immediate relief efforts, while NATO’s Civil Emergency Planning Committee (CEPC) should develop a continuous, dynamic “lessons learned” program. Such a program would integrate the knowledge gathered from NATO’s responses to various strategic shocks into existing strategies.

### DA’s Turn Resilience

#### Democracy controls resilience (DA turns case)

NATO, 7-9-2016, North Atlantic Treaty Organization, https://www.nato.int/cps/en/natohq/official\_texts\_133180.htm, "Commitment to enhance resilience," Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw, 8-9 July 2016 (ermo/sms, Acc:6-17-2022)

The foundation of our resilience lies in our shared commitment to the principles of individual liberty, democracy, human rights, and the rule of law. By taking the necessary steps today to enhance our resilience, we reaffirm our unwavering commitment to defend our populations and our territory against any threat, and to uphold these values.

#### Cyber controls resilience (DA turns case)

NATO, 7-9-2016, North Atlantic Treaty Organization, https://www.nato.int/cps/en/natohq/official\_texts\_133180.htm, "Commitment to enhance resilience," Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw, 8-9 July 2016 (ermo/sms, Acc:6-17-2022)

We will enhance resilience by continuing to invest in robust, flexible, and interoperable military capabilities in accordance with NATO’s Level of Ambition and in line with our pledge on defence investment made at our Summit in Wales. We will protect our military supply chains and are working to address, as appropriate, existing dependencies on Russian-sourced legacy military equipment through national efforts and multinational cooperation.

We will also strengthen and enhance, as a matter of priority, the protection of our national infrastructure and networks against the increasing threat and sophistication of cyber-attack. In this context, we have today made a Cyber Defence Pledge to ensure that the Alliance keeps pace with the fast evolving cyber threat landscape.

#### Turns outweigh – pandemic effects on NATO are marginal

Giovanna De Maio 2020 visiting fellow at GWU George Washington University, former visiting fellow Center for the United States and Europe (CUSE) at Brookings, https://www.brookings.edu/wp-content/uploads/2020/10/FP\_20201028\_nato\_covid\_demaio-1.pdf, "," Brookings Institution (ermo/sms, Acc:6-17-2022)

The goal of this essay is to provide a critical assessment of NATO’s preparedness and response to COVID-19. By exploring the mechanisms in place, the support offered, and the measures taken by NATO to avert a security crisis, it provides reflections on how lessons learned from this pandemic could help to manage and prevent similar future crises. In conclusion, this report argues that the alliance has proved capable of overcoming political tensions and has given an important sign of resilience and solidarity at a crucial moment for its member states. However, more could have been done with better preparedness in managing health risks and most importantly with better political coordination between member states. Despite the disruptive effect COVID-19 had on global economy and international relations, the virus’s impact on the future of the alliance will be marginal. NATO’s survival and success in responding to global challenges will ultimately be contingent on a relaunch of trans-Atlantic relations.

## Impact Defense

### Pandemics

#### Disease can’t cause extinction

**Ord 20** – Dr. Toby, Senior Research Fellow in Philosophy at Oxford University, DPhil in Philosophy from the University of Oxford. “The Precipice: Existential Risk and the Future of Humanity,”, Hachette Books, pg. 124-126, 03-03-2020

Are we safe now from events like this? Or are we more vulnerable? **Could a pandemic threaten humanity’s future?**10

The Black Death was not the only biological disaster to scar human history. It was not even the only great bubonic plague. In 541 CE the Plague of Justinian struck the Byzantine Empire. Over three years it took the lives of roughly 3 percent of the world’s people.11

When Europeans reached the Americas in 1492, the two populations exposed each other to completely novel diseases. Over thousands of years each population had built up resistance to their own set of diseases, but were extremely susceptible to the others. The American peoples got by far the worse end of exchange, through diseases such as measles, influenza and especially smallpox.

During the next hundred years a combination of invasion and disease took an immense toll—one whose scale may never be known, due to great uncertainty about the size of the pre-existing population. We can’t rule out the loss of more than 90 percent of the population of the Americas during that century, though the number could also be much lower.12 And it is very difficult to tease out how much of this should be attributed to war and occupation, rather than disease. As a rough upper bound, the Columbian exchange may have killed as many as 10 percent of the world’s people.13

Centuries later, **the world had become so interconnected that a truly global pandemic was possible**. Near the end of the First World War, a devastating strain of influenza (known as the 1918 flu or Spanish Flu) spread to six continents, and even remote Pacific islands. At least a third of the world’s population were infected and 3 to 6 percent were killed.14 This death toll outstripped that of the First World War, and possibly both World Wars combined.

**Yet even events like these fall short of being a threat to humanity’s longterm potential**.15

[FOONOTE]

**In addition to** this **historical evidence, there are some deeper biological observations and theories suggesting that pathogens are unlikely to lead to the extinction of their hosts. These include the empirical anti-correlation between infectiousness and lethality, the extreme rarity of diseases that kill more than 75% of those infected, the observed tendency of pandemics to become less virulent as they progress and the theory of optimal virulence**. However, there is no watertight case against pathogens leading to the extinction of their hosts.

[END FOOTNOTE]

**In the great bubonic plagues we saw civilization in the affected areas falter, but recover. The regional** 25 to **50 percent death rate was not enough to precipitate a continent-wide collapse of civilization**. It changed the relative fortunes of empires, and may have altered the course of history substantially, but **if anything, it gives us reason to believe that human civilization is likely to make it through future events with similar death rates, even if** they were **global** in scale.

The 1918 flu pandemic was remarkable in having very little apparent effect on the world’s development despite its global reach. It looks like it was lost in the wake of the First World War, which despite a smaller death toll, seems to have had a much larger effect on the course of history.16

It is less clear what lesson to draw from the Columbian exchange due to our lack of good records and its mix of causes. Pandemics were clearly a part of what led to a regional collapse of civilization, but we don’t know whether this would have occurred had it not been for the accompanying violence and imperial rule. **The strongest case against existential risk from natural pandemics is the fossil record** argument from Chapter 3. **Extinction risk from natural causes above 0.1 percent per century is incompatible with the evidence of how long humanity and similar species have lasted**. But this argument only works where the risk to humanity now is similar or lower than the longterm levels. For most risks this is clearly true, but not for pandemics. We have done many things to exacerbate the risk: some that could make pandemics more likely to occur, and some that could increase their damage. Thus even “natural” pandemics should be seen as a partly anthropogenic risk.

#### Global travel decreases lethality and increases immunity.

Thompson et al. 19 - R.N., Mathematical Institute, University of Oxford. C.P. Thompson, Department of Zoology, University of Oxford. O. Pelerman, The Chaim Rosenberg School of Jewish Studies. S. Gupta, Department of Zoology, University of Oxford. U. Obolski, Department of Zoology, University of Oxford. “Increased frequency of travel in the presence of cross-immunity may act to decrease the chance of a global pandemic”, Philosophical Transactions Of The Royal Society Of London, Vol. 374, Issue 1775, <https://royalsocietypublishing.org/doi/10.1098/rstb.2018.0274>, 05-06-2019

3. DISCUSSION The large increase in international travel over the last century might be assumed to have resulted in a high chance of a devastating global pandemic (see e.g. [32]). Here we have used a general epidemiological model to demonstrate that an important, yet often overlooked, factor in the dynamics of a newly introduced high-virulence (HV) pathogen strain is partial immunity driven by exposures to related pathogen strains. When a HV pathogen strain arrives in a population following an epidemic of a related but low virulence (LV) strain, the probability of a major epidemic of the HV strain is decreased. High rates of travel between spatially distinct subpopulations can drive larger outbreaks of low virulence pathogens, in turn providing higher levels of immunity if/when a HV strain, which has the potential to cause a devastating epidemic, appears in the population (Fig 4a-c). Not only did we find that the probability of a major epidemic of the HV strain decreases when travel between subpopulations increases, but the expected final size of the HV strain outbreak can also be reduced. This was particularly pronounced when the level of cross-immunity between strains was high (Fig 4i), since lower cross-immunity levels combined with high travel rates can lead to large epidemics due to increased mixing between subpopulations (Fig 4g). When between-subpopulation travel was increased, the reduction in the probability of a major epidemic of the HV strain, and the expected size, was largely due to cross-immunity reducing the proportion of outbreaks that proceeded to become major epidemics. If/when major epidemics occurred, we found that they were typically larger when there was more travel between regions (Fig 4d-e), although this was not always the case, particularly when the level of cross-immunity was very high (Fig 4f). Partial cross-immunity against a highly virulent strain from prior exposure to a less virulent strain is characteristic of influenza outbreaks in different seasons. For example, it has been suggested that individuals born before 1890 were protected against the 1918 H1N1 pandemic due to the outbreak in 1889-90 [33] and that individuals infected with multiple historical seasonal H1N1 influenza strains were protected against the 2009 H1N1 influenza pandemic strain [34]. Our results suggest that cross-immunity might be a potential explanatory factor as to why there has not been a pandemic as devastating as the 1918 influenza epidemic in the century since, despite the emergence of a strain antigenically similar to the 1918 pandemic strain in 2009. Travel rates increased substantially during the 20th century. As a theoretical exercise, we obtained crude estimates of the travel rates from Europe to the USA, comparing rates during the early 20th century with current travel rates. For the early 20th century rates, we used registry statistics from USA ports from 1914 to 1924 (see Supplementary Material Section 5). Oceanic travel should approximate overall trans-Atlantic travel in this time period, as other modes of long-distance travel were extremely rare. This yielded the approximation λ≈ 3.6· 10-6 per day. Conversely, when estimating current rates of travel from European countries to the USA, approximated using data on air travel, we obtain much higher values of λ≈ 3.7· 10-4 per day. It might be expected that such a significant rise in travel in this time period might have reduced the risk of a global pandemic of a pathogen with circulating strains that induce cross-immunity. Cross-immunity is known to affect the dynamics of outbreaks of various pathogens. Vibrio cholera, for example, exhibits almost complete cross-immunity between strains (a study by Koelle et al. [35] used a cross-immunity level of α= 0.955). On the other hand, human Respiratory Syncytial Virus (hRSV) has been shown to provide incomplete cross-immunity against infections from the same virus group (α ≈ 0.6, [36]). It also provides low levels of cross-immunity again hRSV infections from different virus groups (α ≈ 0.16, [36]), and partial cross-immunity against infections with human Parainfluenza Virus[37]

### Bioterrorism

#### No motive

Lentzos 17 – Filippa, Senior research fellow jointly appointed in the Departments of War Studies and of Global Health and Social Medicine at King’s College London. “Ignore Bill Gates: Where bioweapons focus really belongs”, Bulletin of the Atomic Scientists, <https://thebulletin.org/2017/07/ignore-bill-gates-where-bioweapons-focus-really-belongs/>, 07-03-2017

I disagree. **At a stretch, terrorists taking advantage of advances in biology might be able to create a viable pathogen. That does not mean they could create a sophisticated** biological **weapon**, **and certainly not a weapon that could kill 30 million** people. **Terrorists in any event tend to be conservative**. **They use readily available weapons that have a proven** track **record—not unconventional weapons that are more difficult to develop and deploy. Available evidence shows that few terrorists have ever even contemplated using biological agents, and the extremely small number of bioterrorism incidents in the historical record shows that biological agents are difficult to use as weapons. The skills required to undertake even the most basic of bioterrorism attacks are more demanding than often assumed. These technical barriers are likely to persist in the near- and medium-term future.**

Gates does a disservice to the global health security community when he draws media and policy attention to amateurs such as terrorists. Where biological weapons are concerned, the focus should remain on national militaries and state-sponsored groups. These are the entities that might have the capability, now or in the near future, to develop dangerous biological weapons. The real threat is that sophisticated biological weapons will be used by state actors—or by financially, scientifically, and militarily well-resourced groups sponsored by states. So far, **state-level use of biology to deliberately inflict disease or disrupt human functions has been limited by the strong international norm** **against biological weapons** enshrined in the 1925 Geneva Protocol and the 1972 Biological and Toxin Weapons Convention. These two biological cornerstones of the rules of war uphold the international prohibition against the development, production, stockpiling, and use of biological weapons. But this norm may not survive indefinitely.

#### Bioterrror will fail.

Pinker 18 Steven Arthur Pinker is a Canadian-American cognitive psychologist, Professor at Harvard University. [Enlightenment Now: The Case for Reason, Science, Humanism, and Progress, Viking, Penguin Group]

Biological agents are particularly ill-suited to terrorists, whose goal, recall, is not damage but theater (chapter 13).58 The biologist Paul Ewald notes that natural selection among pathogens works against the terrorist’s goal of sudden and spectacular devastation. 59 Germs that depend on rapid person-to-person contagion, like the common-cold virus, are selected to keep their hosts alive and ambulatory so they can shake hands with and sneeze on as many people as possible. Germs get greedy and kill their hosts only if they have some other way of getting from body to body, like mosquitoes (for malaria), a contaminable water supply (for cholera), or trenches packed with injured soldiers (for the 1918 Spanish flu). Sexually transmitted pathogens, like HIV and syphilis, are somewhere in between, needing a long and symptomless incubation period during which hosts can infect their partners, after which the germs do their damage. Virulence and contagion thus trade off, and the evolution of germs will frustrate the terrorist’s aspiration to launch a headline-worthy epidemic that is both swift and lethal. Theoretically, a bioterrorist could try to bend the curve with a pathogen that is virulent, contagious, and durable enough to survive outside bodies. But breeding such a fine-tuned germ would require Nazi-like experiments on living humans that even terrorists (to say nothing of teenagers) are unlikely to carry off. It may be more than just luck that the world so far has seen just one successful bioterror attack (the 1984 tainting of salad with salmonella in an Oregon town by the Rajneeshee religious cult, which killed no one) and one spree killing (the 2001 anthrax mailings, which killed five).60 To be sure, advances in synthetic biology, such as the gene-editing technique CRISPR-Cas9, make it easier to tinker with organisms, including pathogens. But it’s difficult to re-engineer a complex evolved trait by inserting a gene or two, since the effects of any gene are intertwined with the rest of the organism’s genome. Ewald notes, “I don’t think that we are close to understanding how to insert combinations of genetic variants in any given pathogen that act in concert to generate high transmissibility and stably high virulence for humans.”61 The biotech expert Robert Carlson adds that “one of the problems with building any flu virus is that you need to keep your production system (cells or eggs) alive long enough to make a useful quantity of something that is trying to kill that production system. . . . Booting up the resulting virus is still very, very difficult. . . . I would not dismiss this threat completely, but frankly I am much more worried about what Mother Nature is throwing at us all the time.”62 And crucially, advances in biology work the other way as well: they also make it easier for the good guys [public protectors] (and there are many more of them) to identify pathogens, invent antibiotics that overcome antibiotic resistance, and rapidly develop vaccines.63 An example is the Ebola vaccine, developed in the waning days of the 2014–15 emergency, after public health efforts had capped the toll at twelve thousand deaths rather than the millions that the media had foreseen. Ebola thus joined a list of other falsely predicted pandemics such as Lassa fever, hantavirus, SARS, mad cow disease, bird flu, and swine flu.64 Some of them never had the potential to go pandemic in the first place because they are contracted from animals or food rather than in an exponential tree of person-to-person infections. Others were nipped by medical and public health interventions. Of course no one knows for sure whether an evil genius will someday overcome the world’s defenses and loose a plague upon the world for fun, vengeance, or a sacred cause. But journalistic habits and the Availability and Negativity biases inflate the odds, which is why I have taken Sir Martin up on his bet. By the time you read this you may know who has won.65

### Biosafety

#### No engineered bioweapons – can’t reliably engineer pathogen characteristics – tradeoffs mean the more virulent a pathogen, the less effective it is

Lentzos et al. 14 – Flippa, a Senior Lecturer in Science & International Security at the Department of War Studies and Co-Director of the Centre for Science and Security Studies (CSSS) at King’s College London. Catherine Jefferson, researcher in the Department of Social Science, Health, and Medicine at King’s College London. Claire Morris, a senior research fellow in the Department of Social Science, Health, and Medicine at King’s College London. “The myths (and realities) of synthetic bioweapons”, Bulletin of Atomic Scientists, <https://thebulletin.org/2014/09/the-myths-and-realities-of-synthetic-bioweapons/>, 09-18-2014

**Even experts** **have a hard time enhancing disease pathogens**. **Some** observers **have** also **expressed concerns that synthetic biology could be used to enhance the virulence** or increase the transmissibility **of known pathogens**, creating novel threat agents.

**Mousepox and bird flu** (H5N1) experiments **are frequently cited** to demonstrate how dangerous new pathogens could be designed. But assessments of this threat tend to overlook a salient fact: **In both these experiments**, **the researchers did not actually design the pathogens**. With respect to H5N1, researchers had indeed been trying to design an air-transmissible virus variant for some time, without success. The ferret experiment was set up as an alternative approach, to see whether natural mutations could generate an air-transmissible variant. **The researchers had no influence on the specific mutations induced**. In the mousepox experiment, researchers inserted the gene for interleukin-4 into the mousepox virus to induce infertility in mice and serve as an infectious contraceptive for pest control. The result—that the altered virus was lethal to mice—was unanticipated by the researchers. In other words, it was not planned.

Moreover, some of **the key lessons that came out of the extensive Soviet program to weaponize biological agents involve the** **trade-offs between improving characteristics that are “desired” in the context of a bioweapons program**—such as virulence—**and diminishing other equally “desired” characteristics**, **such as transmissibility or stability**. **Pleiotropic effects**—that is, **when a single gene affects more than one characteristic**—**and genetic instability are common in microorganisms**. While it is too simple to say that **increased transmissibility will** always **be associated with reduced virulence**, this is often the case **for strains produced in laboratories**.

#### No synthetic pathogens

Wimmer 18 – Eckard, Professor at Stony Brook University. “Synthetic Biology, Dual Use Research, and Possibilities for Control”, Defence against Bioterrorism, pg. 7-11, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7123342/>, 03-23-2018

Listed below are some constraints that show how in the US **the development of dangerous infectious agents**, referred to as “**select agents**”, **is** controlled – perhaps misuse even **prevented** – **through** **technical and administrative hurdles**:

I. **Re-creating** **an already existing dangerous virus for malicious intent is a** **complex** scientific **endeavor**. (i) **It requires considerable** scientific **knowledge** and experience **and, more importantly, considerable financial support. That support usually comes from government and private agencies** (NIH, NAF, etc.), organizations **that carefully screen at multiple levels all applications for funding of ALL biological research**. (ii) **It requires an** **environment** **suitable for experimenting with dangerous infectious agents** (**containment** **facilities**). **Any work in containment facilities is also carefully regulated.**

II. **Genetic engineering** to synthesize or modify organisms **relies on chemical synthesis of DNA. Synthesizing DNA is automated and carried out with sophisticated, expensive instruments**. **The major problem** of DNA synthesis, however, **is that the product is** **not error-free. Any** **single mistake** in the sequence of small DNA segments (30–60 nucleotides) or large segments (>500 nucleotides) **can** **ruin the experiment. Companies have developed strategies to produce and deliver error free, synthetic DNA, which investigators can order electronically** from vendors, such as Integrated DNA Technologies (US), GenScript (US) or GeneArt (Germany). **This offers a** superb and **easy way to** **control** experimental **procedures** **carried out in any laboratory**: the **companies** will **automatically scan ordered sequences** in extensive data banks **to monitor relationship to sequences of a** **select agent. If so, the order will be** **stalled** until sufficient evidence has been provided by the investigator that she/he is carrying out experiments approved by the authorities. The entire complex issue of protecting society from the misuse of select agents has been discussed in two outstanding studies [11, 12].

III. **Engineering a virus such that it will be** **more** **harmful** (more contagious, more pathogenic) **is generally difficult because, in principle, viruses have evolved to proliferating maximally in their natural environment. That is, genetic manipulations of a virus often lead to loss of fitness that, in turn, is unwanted in the bioterrorist agent.**

### Food

#### No food wars

Vestby et al. 18 – Jonas, Doctoral Researcher at the Peace Research Institute Oslo, Ida Rudolfsen, doctoral researcher at the Department of Peace and Conflict Research at Uppsala University and PRIO, and Halvard Buhaug, Research Professor at the Peace Research Institute Oslo (PRIO); Professor of Political Science at the Norwegian University of Science and Technology (NTNU); and Associate Editor of the Journal of Peace Research and Political Geography. “Does hunger cause conflict?”, <https://blogs.prio.org/ClimateAndConflict/2018/05/does-hunger-cause-conflict/>, 05-18-2018

It is perhaps surprising, then, that there is **little scholarly merit** in the notion that a short-term reduction in access to **food increases the probability that conflict** will break out. This is because to start or participate in violent conflict requires people to have both the means and the will. Most people on the **brink of starvation are not in the position to resort to violence**, whether against the government or other social groups. In fact, the urban middle classes tend to be the most likely to protest against rises in food prices, since they often have the best opportunities, the most energy, and the best skills to coordinate and participate in protests.

Accordingly, there is a **widespread misapprehension** that social unrest in periods of high food prices relates primarily to food shortages. In reality, the sources of discontent are considerably **more complex** – linked to **political structures**, **land** ownership, **corruption**, the desire for **democratic reforms** and general **economic problems** – where the price of food is seen in the context of general increases in the cost of living. Research has shown that while the international media have a tendency to seek simple resource-related explanations – such as drought or famine – for conflicts in the Global South, debates in the local media are permeated by more complex political relationships.

#### –Systemic study proves alt causes AND causality is mixed

Islami 21 – Zenobia, completed a doctorate in Politics and International Studies at the University of Cambridge. Before this she was a researcher at the Centre for Social Development in Africa at the University of Johannesburg. She also worked with the Afrobarometer research programme for three years based at Idasa where she was responsible for managing survey data collection in southern Africa and outreach co-ordination across all the countries in the study. In addition she was a senior researcher at the Community Agency for Social Enquiry where she managed a number of research projects for government departments and donors. Before moving into social research she was a market researcher working in the private sector and later a lecturer at the School of Economic and Business Sciences, University of the Witwatersrand. “Interaction between Food Prices and Political Instability”, The K4D helpdesk, <https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/16721/999_Food_Prices_and_Political_Instability.pdf?sequence=1&isAllowed=y>, 05-21-2021

2. Methodological issues relating to food prices and political instability

Countries that are affected by food shortages tend to be prone to conflict, violence or instability. Nineteen countries that the Food and Agricultural Organisation (FAO) classifies as being in a protracted food crisis are also affected by conflict and violence (Martin-Shields & Stojets, 2018). Thus, scholars have pondered about the relationship between the availability of food and probability of conflict, especially after 2008 when the media reported on many food related protests in low-and-middle-income countries (Van Weezel, 2016). Furthermore, Smith (2014, p. 679) states that “Dramatic weather events, diversion of crops for fuel production, and continuing volatility in international grain markets have led many to postulate that urban food riots will become more frequent, pervasive and disruptive in the future.”

There is a body of literature which argues that grievances (or relative deprivation) lead to incentives for conflict. Literature in this vein argues that rising food prices increase the propensity for protests and food riots. Young men in particular may join rebel groups to gain access to food (Brinkman & Hendrix, 2011, Raleigh et al., 2015). However, finding the evidence to support these assertions is difficult because the relationship between food prices (as an indicator of the availability or accessibility of food) and conflict is both complex and influenced by many other factors (Smith 2014, van Weezel, 2016, Martin-Shields & Stojets, 2018). Therefore, it becomes difficult to find evidence of causal linkages between food prices and conflict. Moreover, the evidence may be contradictory. This section explores the methodological issues that make the interaction between food prices and political instability difficult to conceptualize and assess.

Endogeneity challenges

It is difficult to study the causal link between food prices and political instability because they are endogenous and there is limited evidence. According to Martin-Shields & Stojets (2018) there are two key sources of endogeneity, which are (1) unobserved confounding factors and (2) reverse causality. Confounding factors are strongly correlated with both food insecurity and conflict. For example, there is much evidence which suggests that national income is negatively correlated with violent conflict and positively correlated with food security. Likewise, state capacity is also related to violence and food security. Reverse causality occurs when it is difficult to ascertain the direction of the causal links: does food insecurity exacerbate conflict or does conflict contribute to food insecurity? (De Winne & Peersman, 2021; Raleigh et al., 2015). Some scholars have dealt with reverse causality by focusing their analysis on international food prices. They argue that international food prices are unlikely to be unaffected by local conflicts and as such there is less need for concern about endogeneity. However, it is still possible that global food prices can be confounded by variables such as global economic activity or oil prices (Smith, 2014). Some quantitative studies address endogeneity by including fixed effects or instrumental variables in models, but De Winne and Peersman (2021) are not convinced that this approach eliminates endogeneity.

### Environment

#### Biodiversity loss won’t cause extinction

Kareiva and Carranza 18 – Peter, Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA.Valerie, Ph.D. Candidate at “Existential risk due to ecosystem collapse: Nature strikes back”, Futures, Vol. 102, Pg. 39-50, <https://doi.org/10.1016/j.futures.2018.01.001>, 01-05-2018

The interesting question is whether any of the planetary thresholds other than CO2 could also portend existential risks. Here the answer is not clear. **One boundary often mentioned as a concern for the fate of global civilization is biodiversity** (Ehrlich & Ehrlich, 2012), with the proposed safety threshold being a loss of greater than 0.001% per year (Rockström et al., 2009). **There is little evidence that this particular 0.001% annual loss is a threshold**—**and it is hard to imagine any data that would allow one to identify where the threshold was** (Brook, Ellis, Perring, Mackay, & Blomqvist, 2013; Lenton & Williams, 2013). A better question is whether one can imagine any scenario by which the loss of too many species leads to the collapse of societies and environmental disasters, even though one cannot know the absolute number of extinctions that would be required to create this dystopia.

**While there are data that relate local reductions in species richness to altered ecosystem function, these results do not point to substantial existential risks**. The **data are small-scale experiments in which plant productivity, or nutrient retention is reduced as species numbers decline locally** (Vellend, 2017), or are local observations of increased variability in fisheries yield when stock diversity is lost (Schindler et al., 2010). **Those are not existential risks**. **To make the link even more tenuous, there is little evidence that biodiversity is even declining at local scales** (Vellend et al., 2013, Vellend et al., 2017). **Total planetary biodiversity may be in decline, but local and regional biodiversity is often staying the same because species from elsewhere replace local losses**, albeit homogenizing the world in the process. Although the majority of conservation scientists are likely to flinch at this conclusion, **there is growing skepticism regarding the strength of evidence linking trends in biodiversity loss to an existential risk for humans** (Maier, 2012; Vellend, 2014). **Obviously if all biodiversity disappeared civilization would end**—**but no one is forecasting the loss of all species**. It seems plausible that the loss of 90% of the world’s species could also be apocalyptic, but not one is predicting that degree of biodiversity loss either. Tragic, but plausible is the possibility of our planet suffering a loss of as many as half of its species. **If global biodiversity were halved, but at the same time locally the number of species stayed relatively stable, what would be the mechanism for an end-of-civilization or even end of human prosperity scenario?** **Extinctions and biodiversity loss are ethical and spiritual losses, but perhaps not an existential risk.**

**No environment extinction**

**Hance 18** – Jeremy, wildlife blogger for the Guardian and a journalist with Mongabay focusing on forests, indigenous people, climate change and more. He is also the author of Life is Good: Conservation in an Age of Mass Extinction, “Could biodiversity destruction lead to a global tipping point?”, https://www.theguardian.com/environment/radical-conservation/2018/jan/16/biodiversity-extinction-tipping-point-planetary-boundary, 01-16-2018 \*edits notated with brackets

**Just over 250 million years ago, the planet suffered** what may be described as its greatest ~~holocaust~~ [mass death]: ninety-six percent of marine genera (plural of genus) and seventy percent of land vertebrate vanished for good. Even insects suffered a **mass extinction** – the only time before or since. Entire classes of animals – like trilobites – went out like a match in the wind.

But **what’s arguably most fascinating about this event – known as the Permian-Triassic extinction** or more poetically, the Great Dying – **is the fact that anything survived at all. Life**, it seems, **is so ridiculously adaptable that not only did thousands of species make it through whatever killed off nearly everything** (no one knows for certain though theories abound) **but, somehow, after millions of years life even recovered and went on to write new tales.**

Even as **the Permian-Triassic extinction** event shows the fragility of life, it also **proves its resilience in the long-term**. **The lessons of such mass extinctions – five to date and arguably a sixth happening as I write – inform science today**. **Given that extinction levels are currently 1,000** (some even say 10,000**) times the background rate, researchers have long worried about our current destruction of biodiversity – and what that may mean for our future Earth and ourselves**.

In 2009, a group of researchers identified nine global boundaries for the planet that if passed could theoretically push the Earth into an uninhabitable state for our species. These global boundaries include climate change, freshwater use, ocean acidification and, yes, biodiversity loss (among others). The group has since updated the terminology surrounding biodiversity, now calling it “biosphere integrity,” but that hasn’t spared it from critique.

A paper last year in Trends in Ecology & Evolution scathingly attacked the idea of any global biodiversity boundary.

“**It makes no sense that there exists a tipping point of biodiversity loss beyond which the Earth will collapse**,” **said co-author and ecologist, José Montoya, with Paul Sabatier Univeristy in France. “There is no rationale for this.”**

Montoya wrote the paper along with Ian Donohue, an ecologist at Trinity College in Ireland and Stuart Pimm, one of the world’s leading experts on extinctions, with Duke University in the US.

Montoya, Donohue and Pimm argue that **there isn’t evidence of a point at which loss of species leads to ecosystem collapse, globally or even locally. If the planet didn’t collapse after the Permian-Triassic extinction event, it won’t collapse now** – though our descendants may well curse us for the damage we’ve done.

Instead, according to the researchers, every loss of species counts. But **the damage is gradual and incremental, not a sudden plunge.** **Ecosystems**, according to them, **slowly degrade but never fail outright.**

“**Of more than 600 experiments of biodiversity effects on various functions, none showed a collapse**,” Montoya said. “In general, the loss of species has a detrimental effect on ecosystem functions...We progressively lose pollination services, water quality, plant biomass, and many other important functions as we lose species. But **we never observe a critical level of biodiversity over which functions collapse.”**

### Climate

#### Warming won’t be catastrophic

Zycher 21 – Dr. Benjamin, Senior Fellow at the American Enterprise Institute, Doctorate in Economics from UCLA, Master in Public Policy from the University of California, Berkeley, and Bachelor of Arts in Political Science from UCLA, Former Senior Economist at the RAND Corporation, Former Adjunct Professor of Economics at the University of California, Los Angeles (UCLA) and at the California State University Channel Islands, and Former Senior Economist at the Jet Propulsion Laboratory, California Institute of Technology. “The Case for Climate Change Realism”, AEI, <https://www.aei.org/articles/the-case-for-climate-change-realism/>, 06-21-2021

Unable to demonstrate that observed climate trends are due to anthropogenic climate change — or even that these events are particularly unusual or concerning — **climate catastrophists** will often **turn to dire predictions** about prospective climate phenomena. **The problem** with such predictions **is** that **they are almost always generated by climate models driven by highly complex sets of assumptions about which there is significant dispute. Worse, these models are notorious for failing to accurately predict already documented changes in climate**. As climatologist Patrick Michaels of the Competitive Enterprise Institute notes:

**During all periods** from 10 years (2006-2015) to 65 (1951-2015) years in length, **the observed temperature trend lies in the lower half of** the collection of **climate model simulations, and for several periods it lies very close** (or even below) **the 2.5th percentile of all the model runs**. Over shorter periods, such as the last two decades, a plethora of mechanisms have been put forth to explain the observed/modeled divergence, but none do so completely and many of the explanations are inconsistent with each other.

Similarly, climatologist John Christy of the University of Alabama in Huntsville observes that **almost all of the 102 climate models** incorporated into the Coupled Model Intercomparison Project (CMIP) — a tracking effort conducted by the Lawrence Livermore National Laboratory — **overstate past and current temperature trends by a factor of two to three, and at times even more**. It seems axiomatic to say **we should not rely on climate models** that are unable to predict the past or the present to make predictions about the distant future.

The overall temperature trend is not the only parameter the models predict poorly. As an example, **every** CMIP **climate model predicts that increases in atmospheric concentrations of greenhouse gas should create an enhanced heating effect in** the mid-troposphere **over the tropics** — that is, at an altitude over the tropics of about 30,000-40,000 feet. The underlying climatology is simple: Most of the tropics is ocean, and as increases in greenhouse-gas concentrations warm the Earth slightly, there should be an increase in the evaporation of ocean water in this region. When the water vapor rises into the mid-troposphere, it condenses, releasing heat. And **yet** the **satellites cannot find this heating effect — a reality suggesting that our understanding of climate and atmospheric phenomena is not as robust as many seem to assume**.

**The poor predictive record of mainstream climate models is exacerbated by the tendency of the IPCC and U.S. government agencies to assume highly unrealistic future increases in greenhouse-gas concentrations**. The IPCC’s 2014 Fifth Assessment Report, for example, uses four alternative “representative concentration pathways” to outline scenarios of increased greenhouse-gas concentrations yielding anthropogenic warming. These scenarios are known as RCP2.6, RCP4.5, RCP6, and RCP8.5. Since 1950, the average annual increase in greenhouse-gas concentrations has been about 1.6 parts per million. The average annual increase from 1985 to 2019 was about 1.9 parts per million, and from 2000 to 2019, it was about 2.2 parts per million. The largest increase that occurred was about 3.4 parts per million in 2016. But the assumed average annual increases in greenhouse-gas concentrations through 2100 under the four RCPs are 1.1, 3.0, 5.5, and an astounding 11.9 parts per million, respectively.

The studies generating the most alarmist predictions are the IPCC’s Special Report on Global Warming of 1.5°C and the U.S. government’s Fourth National Climate Assessment, both of which were published in 2018. Both assume RCP8.5 as the scenario most relevant for policy planning. **The average** annual **g**reen**h**ouse-**g**as **increase** under RCP8.5 **is over five times the annual average** for 2000-2019 **and almost four times the single biggest increase on record**. Climatologist Judith Curry, formerly of the Georgia Institute of Technology, describes such a scenario as **“borderline impossible.”**

**Even if everyone stopped all emissions today it wouldn’t solve warming**

Cascio 19 – Jamais, a professional futurist who has been exploring the intersection of environmental, technological, and cultural change for 25 years. Selected by Foreign Policy magazine as one of their Top 100 Global Thinkers in 2009, Cascio specializes in plausible scenarios of the future. He is a Distinguished Fellow at the Institute for the Future, where he works on a wide array of projects. Cascio’s written work has appeared in both academic and popular journals and collections. “The apocalypse: It’s not the end of the world”, Bulletin of the Atomic Scientists, Vol. 75, No. 6, pg. 269-272, <https://www.tandfonline.com/doi/abs/10.1080/00963402.2019.1680047?journalCode=rbul20>, 10-28-2019

**There’s a 25- to 50-year lag between the emission of atmospheric carbon and its persistent impact on temperature**. This means **the environmental disruption attributable to global warming we’re seeing now is the result of carbon emissions up through the 1980s**. It also means **we could cut off all carbon emissions today, globally, and still see another generation of warming**. Beyond the environmental, economic, and human consequences, imagine the political impact of taking bold action that **produces no observable benefits for 20 years, or even longer**.

### Russia

**No Russia war – they won’t risk it**

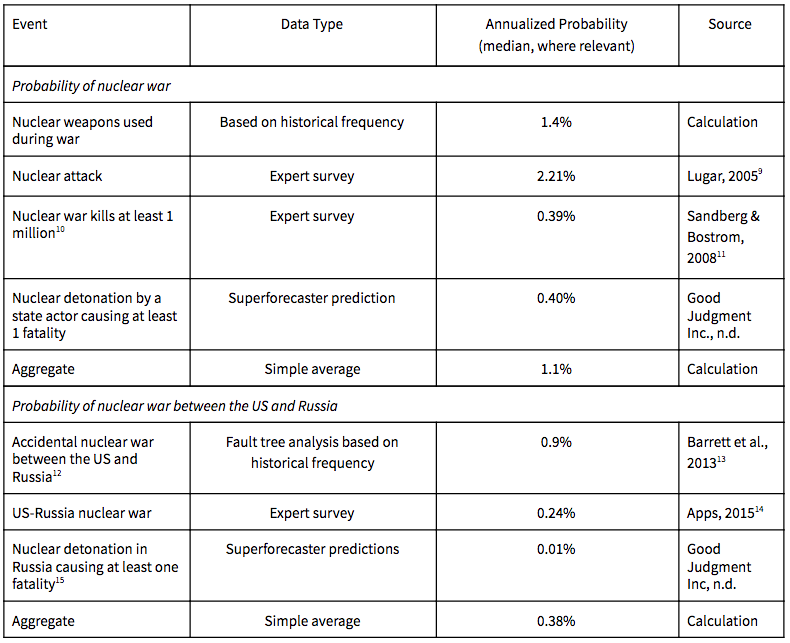
Woolf 21 – Amy F, Specialist in Nuclear Weapons Policy in the Foreign Affairs, Defense, and Trade Division of the Congressional Research Service at the Library of Congress, received a Master’s in Public Policy from the Kennedy School of Government at Harvard University in 1983. “Russia’s Nuclear Weapons: Doctrine, Forces, and Modernization”, CRS, <https://sgp.fas.org/crs/nuke/R45861.pdf>, 09-13-2021

One analyst has postulated that **Russia may actually** **raise its nuclear threshold** **as it bolsters** its **conventional forces**. According to this analyst, “**It is difficult to understand why** **Russia would want to pursue military adventurism** **that would risk all-out confrontation** **with a technologically advanced and nuclear-armed adversary like NATO**. **While** **opportunistic**, **and possibly even reckless**, **the Putin regime does not appear to be suicidal**.” 144 **As a study from** the **RAND** Corporation **noted**, **Russia has “invested considerable sums in developing and fielding long-range conventional strike weapons since the mid-2000s to provide Russian leadership with a buffer against** **reaching the nuclear threshold**—**a set of conventional escalatory options that can achieve strategic effects without resorting to nuclear weapons**.”145 Others note, however, that Russia has integrated these “conventional precision weapons and nuclear weapons into a single strategic weapon set,” lending credence to the view that Russia may be prepared to employ, or threaten to employ, nuclear weapons during a regional conflict.

**Their impact starts at 0.38%**

Rodriguez 19 – Lusia, research fellow at the Forethought Foundation for Global Priorities Research, she also researched nuclear war at Rethink Priorities and as a visiting researcher at the Future of Humanity Institute, holds an M.A. from The Heller School for Social Policy and Management at Brandeis University. “How likely is a nuclear exchange between the US and Russia?”, Effective Altruism Forum, <https://forum.effectivealtruism.org/posts/PAYa6on5gJKwAywrF/how-likely-is-a-nuclear-exchange-between-the-us-and-russia>, 06-19-2019

My previous posts address how bad a nuclear war is likely to be, conditional on there being a nuclear war (see [this post on the deaths caused directly by a US-Russia nuclear exchange](https://forum.effectivealtruism.org/posts/pMsnCieusmYqGW26W/how-bad-would-nuclear-winter-caused-by-a-us-russia-nuclear), and [this post on the deaths caused by a nuclear famine](https://forum.effectivealtruism.org/posts/dtQ5hpYjniYKWhmhx/would-us-and-russian-nuclear-forces-survive-a-first-strike)), but they don’t consider the likelihood that we actually see a US-Russia nuclear exchange unfold in the first place. In this post, **I get a rough sense of how probable a nuclear war might be by looking at historical evidence**, **the views of experts**, **and** **predictions made by forecasters**. **I find that, if we aggregate those perspectives**, there’s about a 1.1% chance of nuclear war each year, and **that the chances of a nuclear war between the US and Russia, in particular, are around 0.38%** per year.



### China

#### No US-China war.

Krulak and Friedman 21 – Charles C, a retired four-star general, is a former commandant of the US Marine Corps and former president of Birmingham-Southern College. Alex, co-founder of Jackson Hole Economics and a former chief financial officer of the Bill & Melinda Gates Foundation. “The US and China Are Not Destined for War”, Project Syndicate, <https://www.project-syndicate.org/commentary/us-china-not-destined-for-war-by-charles-c-krulak-and-alex-friedman-1-2021-08>, 08-17-2021

First and foremost, any military conflict between the two would quickly turn nuclear. The US thus finds itself in the same situation that it was in vis-à-vis the Soviet Union. Taiwan could easily become this century’s tripwire, just as the “Fulda Gap” in Germany was during the Cold War. But the same dynamic of “mutual assured destruction” that limited US-Soviet conflict applies to the US and China. And the international community would do everything in its power to ensure that a potential nuclear conflict did not materialize, given that the consequences would be fundamentally transnational and – unlike climate change – immediate.

A US-China conflict would almost certainly take the form of a proxy war, rather than a major-power confrontation. Each superpower might take a different side in a domestic conflict in a country such as Pakistan, Venezuela, Iran, or North Korea, and deploy some combination of economic, cyber, and diplomatic instruments. We have seen this type of conflict many times before: from Vietnam to Bosnia, the US faced surrogates rather than its principal foe.

Second, it is important to remember that, historically, China plays a long game. Although Chinese military power has grown dramatically, it still lags behind the US on almost every measure that matters. And while China is investing heavily in asymmetric equalizers (long-range anti-ship and hypersonic missiles, military applications of cyber, and more), it will not match the US in conventional means such as aircraft and large ships for decades, if ever.

A head-to-head conflict with the US would thus be too dangerous for China to countenance at its current stage of development. If such a conflict did occur, China would have few options but to let the nuclear genie out of the bottle. In thinking about baseline scenarios, therefore, we should give less weight to any scenario in which the Chinese consciously precipitate a military confrontation with America. The US military, however, tends to plan for worst-case scenarios and is currently focused on a potential direct conflict with China – a fixation with overtones of the US-Soviet dynamic.

This raises the risk of being blindsided by other threats. Time and again since the Korean War, asymmetric threats have proven the most problematic to national security. Building a force that can handle the worst-case scenario does not guarantee success across the spectrum of warfare.

The third reason to think that a Sino-American conflict can be avoided is that China is already chalking up victories in the global soft-power war. Notwithstanding accusations that COVID-19 escaped from a virology lab in Wuhan, China has emerged from the pandemic looking much better than the US. And with its Belt and Road Initiative to finance infrastructure development around the world, it has aggressively stepped into the void left by US retrenchment during Donald Trump’s four-year presidency. China’s leaders may very well look at the current status quo and conclude that they are on the right strategic path.

Finally, China and the US are deeply intertwined economically. Despite Trump’s trade war, Sino-American bilateral trade in 2020 was around $650 billion, and China was America’s largest trade partner. The two countries’ supply-chain linkages are vast, and China holds more than $1 trillion in US Treasuries, most of which it cannot easily unload, lest it reduce their value and incur massive losses.

To be sure, logic can be undermined by a single act and its unintended consequences. Something as simple as a miscommunication can escalate a proxy war into an interstate conflagration. And as the situations in Afghanistan and Iraq show, America’s track record in war-torn countries is not encouraging. China, meanwhile, has dramatically stepped up its foreign interventions. Between its expansionist mentality, its growing foreign-aid program, and rising nationalism at home, China could all too easily launch a foreign intervention that might threaten US interests.

Cyber mischief, in particular, could undercut conventional military command-and-control systems, forcing leaders into bad decisions if more traditional options are no longer on the table. And Sino-American economic ties may come to matter less than they used to, especially as China moves from an export-led growth model to one based on domestic consumption, and as two-way investment flows decline amid escalating bilateral tensions.

A “mistake” on the part of either country is always possible. That is why diplomacy is essential. Each country needs to determine its vital national interests vis-à-vis the other, and both need to consider the same question from the other’s perspective. For example, it may be hard to accept (and unpopular to say), but civil rights within China might not be a vital US national interest. By the same token, China should understand that the US does indeed have vital interests in Taiwan.

#### China is a cooperative reformist power – they’ll integrate into the liberal order but only if the United States moderates and seeks conciliatory gestures to manage competition

Zakaria 20 – Fareed, is the host of Fareed Zakaria GPS, on CNN, and the author of The Post-American World. Ph.D. in government from Harvard University. “The New China Scare Why America Shouldn’t Panic About Its Latest Challenger.”, Foreign Affairs, <https://www.foreignaffairs.com/articles/china/2019-12-06/new-china-scare>, xx-xx-2020 \*it is from the jan/feb 2020 issue

By comparison, **today’s China is a remarkably responsible** **nation on the geopolitical and military front. It has not gone to war since** **1979**. **It has not used lethal military force abroad since 1988**. **Nor has it funded or supported proxies or armed insurgents anywhere in the world since the early 1980s**. **That record of nonintervention is unique among the world’s great powers**. All the other permanent members of the UN Security Council have used force many times in many places over the last few decades—a list led, of course, by the United States.

**China has also gone from seeking to undermine the international system to spending large sums to bolster it.** **Beijing is now the second-largest funder** **of the** **United Nations** **and** **the UN peacekeeping program. It has deployed 2,500 peacekeepers, more than all the other permanent members** of the Security Council **combined**. **Between 2000 and 2018, it supported 182 of 190 Security Council resolutions imposing sanctions on nations deemed to have violated international rules or norms**. Granted, the principles anchoring Beijing’s foreign policy today—“respect for sovereignty,” “territorial integrity,” and “nonintervention”—are animated in large part by a desire to fend off Western interference. Yet **they highlight a remarkable shift from a radical agenda of revolution to a conservative concern for stability**. **Had someone predicted in 1972 that China would become a guardian of the international status quo, few would have believed it possible.**

TRADING PLACES The new consensus on China’s economic behavior holds that China has forced multinational companies to transfer their technology, has subsidized its “national champions,” and has placed formal and informal barriers in the path of foreign firms seeking to enter its market. Beijing has, in short, used the open international economy to bolster its own statist and mercantilist system. It is true that these unfair policies demand attention and action from the rest of the world. The Trump administration deserves some credit for tackling this problem—especially in light of Xi’s embrace of statism after decades of liberalization. But how large and permanent is this reversal? How different are China’s practices from those of other emerging market countries today? And again, what is the right American response?

Almost all economists agree that China owes much of its economic success to three fundamental factors: the switch from communist economics to a more market-based approach, a high savings rate that makes possible large capital investments, and rising productivity. Over the last three decades, the country has also opened itself up substantially to foreign investment—more so than many other large emerging markets—allowing capital to pour in. China is one of only two developing countries to have ranked in the top 25 markets for foreign direct investment since 1998. Of the BRICS group of large emerging markets (which includes Brazil, Russia, India, China, and South Africa), **China is consistently ranked as the most open and competitive economy**. **As for the effect of mercantilist Chinese policies** on the U.S. economy, former U.S. Treasury Secretary Lawrence Summers has noted that “**it cannot be argued seriously that unfair Chinese trade practices have affected U.S. growth by even** **0.1 percent a year**.”

It is worth noting that on the economic front, almost every charge leveled at China today—**forced technology** **transfers, unfair trade practices, limited access for foreign firms, regulatory favoritism for locals—was leveled at Japan in the** **1980s** and 1990s. At the time, Clyde Prestowitz’s influential book Trading Places: How America Is Surrendering Its Future to Japan and How to Win It Back explained that the United States had never imagined dealing with a country in which “industry and trade [would be] organized as part of an effort to achieve specific national goals.” Another widely read book of the era was titled The Coming War With Japan. As Japanese growth tapered off, so did these exaggerated fears.

China today presents some new challenges, especially given Xi’s determination to have the state play a leading role in helping the country gain economic dominance in crucial sectors. But in the broad sweep of history, China’s greatest advantage in the global trading system has come not from its willingness to violate the rules but from its sheer size. Countries and companies want access to China and are willing to make concessions to get it. This hardly makes China unusual. Other countries with similar clout often get away with similar behavior or worse—none more so than the United States. A 2015 report by the financial services giant Credit Suisse provides a useful tally of nontariff barriers against foreign goods put in place by major countries between 1990 and 2013. With a total count of almost 450, the United States is in a league of its own. Next is India, then Russia. China comes in at number five, with one-third as many nontariff barriers imposed as the United States. The picture hasn’t changed much in the years since.

Most of the recent changes in Beijing’s economic policy have been negative, but even that is not the entire story. China is changing along several, sometimes contradictory lines. **Even with the return to greater state control under Xi,** **a wild free market has flourished in vast spheres such as consumer goods and services. There has also been some real regulatory liberalization**—**even administrative and judicial reform**, as the political scientist Yuen Yuen Ang has detailed. **Government support for state-owned enterprises is greater than it was a few years ago, but Beijing has abandoned what was once a central part of its mercantilist strategy: using an undervalued currency to boost growth**. The economist Nicholas Lardy has calculated that the end of currency mercantilism accounts for “about half of China’s growth slowdown since the global financial crisis.”

Or consider what is, according to Peter Navarro, U.S. President Donald Trump’s top trade adviser, issue number one in the United States’ trade dispute with China: “the theft of our intellectual property.” That China engages in rampant theft of intellectual property is a widely accepted fact—except among U.S. companies doing business in China. In a recent survey of such companies conducted by the U.S.-China Business Council, intellectual property protection ranked sixth on a list of pressing concerns, down from number two in 2014. These companies worry more about state funding for rival companies and delayed approval of licenses for their products. Why this shift from 2014? That year, China created its first specialized courts to handle intellectual property cases. In 2015, foreign plaintiffs brought 63 cases in the Beijing Intellectual Property Court. The court ruled for the foreign firms in all 63. Of course, reforms such as these are often undertaken only in the face of Western pressure and, even then, because they serve China’s own competitive interests—the largest filer of patents worldwide last year was the Chinese telecommunications giant Huawei. But it is also true that many Chinese economists and senior policymakers have argued that the country will modernize and grow its economy only if it pursues further reform. Failure to do so, they have warned, will get the country stuck in the “middle-income trap”—the common fate of countries that escape poverty but hit a wall at a GDP of around $10,000 per capita, having failed to modernize their economic, regulatory, and legal systems any further. As far as China’s political development is concerned, the verdict is unambiguous. China has not opened up its politics to the extent that many anticipated; it has in fact moved toward greater repression and control. Beijing’s gruesome treatment of the Uighurs in Xinjiang, a region in northwestern China, has created a human rights crisis. The state has also begun to use new technologies, such as facial recognition software and artificial intelligence, to create an Orwellian system of social control. These realities are a tragedy for the Chinese people and an obstacle to the country’s participation in global leadership. It would be an exaggeration, however, to adduce them as proof of the failure of U.S. policy. In truth, few U.S. officials ever argued that engagement would lead inexorably to liberal democracy in China. They hoped that it would, even expected it, but their focus was always on moderating China’s external behavior, which they achieved. CROSSING THE LINE Under Xi, China’s foreign policy has become more ambitious and assertive, from its pursuit of leadership roles in UN agencies to the vast Belt and Road Initiative and the construction of islands in the South China Sea. These moves mark a break with the country’s erstwhile passivity on the global stage, captured by the former Chinese leader Deng Xiaoping’s adage “Hide your strength, bide your time.” China’s military buildup, in particular, has been of a size and designed in a manner that suggest that a long-term plan is being systematically executed. But what would an acceptable level of influence for China be, given its economic weight in the world? If Washington does not first ask this question, it cannot make serious claims about which uses of Chinese power cross the line. China is, by some measures, already the world’s largest economy. Within ten to 15 years, it will probably take this spot by all measures. Deng offered his advice to “bide your time” when the country’s economy represented roughly one percent of global GDP. Today, it represents over 15 percent. China has indeed bided its time, and now, a much stronger China naturally seeks a larger regional and global role.

**Consider the case of another country that was rising in strength, this one back in the nineteenth century, although not nearly on the scale of China today.** The United States in 1823 was what would now be called a developing country—not even among the world’s top five economies—and yet with the Monroe Doctrine, it declared the entire Western Hemisphere off-limits to the great powers of Europe. The American case is an imperfect analogy, but it serves as a reminder that as countries gain economic strength, they seek greater control and influence over their environment. **If Washington defines every such effort by China as dangerous**, **it will be setting the** **U**nited **S**tates **up against the natural dynamics of international life and falling into** what **the** scholar Graham Allison has called “the **Thucydides trap**”—**the danger of a war between a rising power and an anxious hegemon.**

For the United States, dealing with such a competitor is a new and unique challenge. Since 1945, the major states rising to wealth and prominence have been Washington’s closest allies, if not quasi protectorates: Germany, Japan, and South Korea. A normally disruptive feature of international life—rising new powers—has thus been extraordinarily benign for the United States. China, however, is not only much larger than the rising powers that came before; it has also always been outside the United States’ alliance structures and sphere of influence. As a result, it will inevitably seek a greater measure of independent influence. The challenge for the United States, and the West at large, will be to define a tolerable range for China’s growing influence and accommodate it—so as to have credibility when Beijing’s actions cross the line. So far, the West’s track record on adapting to China’s rise has been poor. Both the United States and Europe have, for example, been reluctant to cede any ground to China in the core institutions of global economic governance, the World Bank and the International Monetary Fund, which remain Euro-American clubs. For years, China sought a larger role in the Asian Development Bank, but the United States resisted. As a result, in 2015, Beijing created its own multilateral financial institution, the Asian Infrastructure Investment Bank (which Washington opposed, fruitlessly). Pompeo has asserted—in a patronizing statement that would surely infuriate any Chinese citizen—that the United States and its allies must keep China in “its proper place.” China’s sin, according to Pompeo, is that it spends more on its military than it needs to for its own defense. But the same, of course, could be said of the United States—and of France, Russia, the United Kingdom, and most other large countries. In fact, a useful definition of a great power is one that is concerned about more than just its own security. The old order—in which small European countries act as global heavyweights while behemoths such as China and India are excluded from the first ranks of global institutions—cannot be sustained. China will have to be given a place at the table and genuinely integrated into the structures of decision-making, or it will freelance and unilaterally create its own new structures and systems. China’s ascension to global power is the most significant new factor in the international system in centuries. It must be recognized as such. NEITHER LIBERAL NOR INTERNATIONAL NOR ORDERLY

**To many, Beijing’s rise has sounded the death knell of the** **liberal** **international** **order**—the set of policies and institutions, forged largely by the United States after World War II, that compose a rules-based system in which interstate war has waned while free trade and human rights have flourished. **China’s domestic political character—a one-party state that brooks no opposition or dissent—and some of its international actions make it an uneasy player in this system**.

**It is**, however, **worth remembering that the liberal international order was never as liberal**, as **international**, **or as** **orderly** **as it is now nostalgically described**. From the very beginning, **it faced vociferous opposition from the Soviet Union**, followed by a series of **breakdowns of cooperation among allies** (**over** the **Suez** crisis in 1956, over **Vietnam** a decade later) **and** the partial defection of the United States under **Nixon**, **who** in 1971 **ended Washington’s practice of underwriting the international monetary order using U.S. gold reserves**. A more realistic image is that of a nascent liberal international order, marred from the start by exceptions, discord, and fragility. **The** **United States**, for its part, **often operated outside the rules of this order, making frequent military interventions with or without UN approval; in** the years between 1947 and 1989, when the United States was supposedly building up the liberal international order, **it attempted regime change around the world 72 times**. **It reserved the same right in the economic realm, engaging in protectionism even as it railed against more modest measures adopted by other countries.**

**The** truth about the **liberal international order**, as with all such concepts, is that **there** **never really was a golden age, but neither has the order decayed** **as much as people claim.** **The** **core attributes** of this order—**peace and stability—are still in place, with a marked decline in war and annexation** since 1945. (Russia’s behavior in Ukraine is an important exception.) **In economic terms, it is a free-trade world**. **Average tariffs** among industrialized countries **are below three percent**, **down** from **15** percent before the Kennedy Round of international trade talks, **in the 1960s**. The last decade has seen backsliding on some measures of globalization but from an extremely high baseline. Globalization since 1990 could be described as having moved three steps forward and only one step back.

**China hardly qualifies as a** **mortal danger** to this imperfect order. **Compare its actions to those of Russia**—**a country that** in many arenas simply **acts as a spoiler**, **trying to disrupt the Western democratic world** and its international objectives, often **benefiting directly from instability** **because it raises oil prices** (the Kremlin’s largest source of wealth). **China** plays no such role. When it does bend the rules and, say, engages in cyberwarfare, it steals military and economic secrets rather than trying to delegitimize democratic elections in the United States or Europe. Beijing fears dissent and opposition and is especially neuralgic on the issues of Hong Kong **and** Taiwan, using its economic clout to censor Western companies unless they toe the party line. But these **are attempts to preserve what Beijing views as its sovereignty**—nothing like Moscow’s systematic efforts to disrupt and delegitimize Western democracy in Canada, the United States, and Europe. In short, **China has acted in ways that are interventionist, mercantilist, and unilateral—but often far less so than other great powers.**

The rise of a one-party state that continues to reject core concepts of human rights presents a challenge. In certain areas, Beijing’s repressive policies do threaten elements of the liberal international order, such as its efforts to water down global human rights standards and its behavior in the South China Sea and other parts of its “near abroad.” Those cases need to be examined honestly. In the former, little can be said to mitigate the charge. China is keen on defining away its egregious human rights abuses, and that agenda should be exposed and resisted. (The Trump administration’s decision to withdraw from the UN Human Rights Council achieved the exact opposite by ceding the field to Beijing.)

But **the liberal international order has been able to accommodate itself to a variety of regimes**—**from** **Nigeria** **to** **Saudi Arabia** **to** **Vietnam**—**and still provide a rules-based framework that encourages greater peace**, **stability**, **and** **civilized conduct** among states. **China’s size and policies present a new challenge to the expansion of human rights that has largely taken place since 1990**. But **that one area of potential regression should not be viewed as a mortal threat to the much larger project of a rules-based, open, free-trading international system.**

#### China-Russia alliance and it won’t be hostile

Aron 19 – Dr. Leon, Resident Scholar and Director of Russian Studies at the American Enterprise Institute, Ph.D. in Political Sociology and M.A in Media Sociology from Columbia University, B.A. from Moscow State Pedagogical Institute. “Are Russia and China Really Forming an Alliance?”, Foreign Affairs, <https://www.foreignaffairs.com/articles/china/2019-04-04/are-russia-and-china-really-forming-alliance>, 04-04-2019

In March of 1969, Chinese troops ambushed and killed a Soviet border patrol on an island near the Chinese-Russian border. Fighting on and near the island lasted for months and ended with hundreds of casualties. Fifty years later, the ferocity of the skirmish between Mao Zedong’s China and Leonid Brezhnev’s Soviet Union seems to belong to a very distant past—so distant, indeed, that **many foreign-policy experts are convinced that an anti-U.S. alliance between the two countries is emerging. Yet** even half a century on, **such an assessment stretches the evidence beyond what it can bear. On closer inspection, Chinese-Russian economic, foreign policy, and military cooperation is less than impressive. The history of relations between the two countries is fraught, and they play vastly different roles in the world economy, making a divergence in their objectives all but unavoidable. In short, reports of a Russian-Chinese alliance have been greatly exaggerated**.

THE ECONOMIC REALITY

**Economic relations** between Russia and China **are rapidly expanding**, and some experts have cited these ties as evidence of a growing closeness between the two countries. Indeed, just last year, bilateral trade increased by at least 15 percent compared to 2017 and reached a record $100 billion. **Yet asymmetries in the scale and structure of bilateral commerce suggest caution**: although China is Russia’s second-largest trading partner (after the EU) and Russia’s largest individual partner in both exports and imports, for China the Russian market is at best second-rate. Russia ranks tenth in Chinese exports and does not make it into the top ten in either imports or total trade.

**The structure of** the **trade is** similarly **skewed**. More than three-quarters of Russia’s exports to China are raw materials, specifically crude oil, wood, and coal. China’s sales to Russia are 45 percent consumer goods and 38 percent electronics and machinery. The completion this year of the Power of Siberia natural gas pipeline will further widen the disparity by facilitating the export of $400 billion worth of Russian raw materials to China over the next 30 years. The nature of this exchange corresponds quite closely to Karl Marx’s and Vladimir Lenin’s description of colonial trade, in which one country becomes a raw material appendage of another. It is rare for metropolises to ally themselves with their colonies.

Russia’s and China’s **efforts at joint economic development and investment do not look much like cooperation between** two **eager allies**. Even after Moscow’s so-called pivot to the east, spurred by post-Crimea sanctions, from 2014 through 2018 China directly invested no more than $24 billion into its northern neighbor’s economy. During the same period, China invested $148 billion in sub-Saharan Africa (including $31 billion in Nigeria alone), and $88 billion in South America (including $34 billion just in Brazil). Or consider the Program of Cooperation in the regions of Far East, Russian Eastern Siberia, and Chinese North-East in 2009–2018, signed in 2009 by Chinese President Hu Jintao and Russian President Dmitry Medvedev. The initiative included 91 joint investment projects. Six years into the program, China had financed only 11 of these, while the rest were delayed, in the words of the Carnegie Moscow Center’s Ivan Zuenko, by “bureaucratic hassles.”

**China’s parsimony is evident in both the private and public sectors. A much-heralded plan for the CEFC China Energy company to purchase a 14 percent stake in Russia’s largest**, and majority state-owned, **oil company,** Rosneft, **fell through. So did a Chinese** government **pledge to invest** $25 billion **in the Power of Siberia pipeline**, which cost Russia $55 billion. Moscow has celebrated its projected annual delivery of 38 billion cubic meters of natural gas to China via Power of Siberia as a big step toward economic interdependence. But to China, the pipeline is no more than a diversification of the country’s energy sources. In 2017, it imported over 90 billion cubic meters of natural gas, mostly from Australia, Qatar, and Turkmenistan.

A FOREIGN POLICY MISMATCH

**Russia and China are hardly any closer in foreign policy than they are in trade**. To be sure, the two countries stand together in their declared opposition to U.S. primacy in world affairs. Both advocate a multipolar world and swear to resist the perceived threat of U.S. intrusion into their spheres of influence. Beijing and Moscow also see eye to eye with respect to the threat posed to their regimes by what they see as U.S.-inspired, if not U.S.-engineered, pro-democracy “color revolutions.” They vote almost in unison at the United Nations.

Yet **away from the global limelight** and closer to their shared Eurasian home, **the two** countries **are hardly aligned. They poach in each other’s spheres of influence, contest each other’s clients, and reach for each other’s economic and geopolitical assets**.

**China has failed to support Russia in matters of great geopolitical importance to Moscow. Beijing refused to recognize** the independence of **Abkhazia and South Ossetia after the Russian-Georgian war** in 2008. **It abstained from**, instead of voting against, **the UN resolution condemning Russia’s** 2014 **seizure of Crimea**. In another symbolic display that could not have pleased Moscow, President Xi Jinping chose to inaugurate the 2013 Belt and Road Initiative (BRI) in Astana, the capital of Kazakhstan. By choosing to flex Chinese power in the largest of the former Soviet Central Asian republics—the one that shares the world’s second-longest border with Russia, at 4,250 miles, and is home to the greatest proportion of ethnic Russians in Central Asia—Xi flagrantly intruded on Russia’s sphere of influence. (A year later, Putin mused about the fragility of Kazakhstan’s statehood during a question and answer session at Russia’s National Youth Forum.) Xi and Putin later agreed to “coordinat[e] cooperation” between the Russia-led Eurasian Economic Union and Belt and Road. But although some of the subsequent Chinese- and Kazakh-led infrastructure projects have been completed, many Russian-led projects have stalled due to financing and negotiation problems.

For its part, Russia periodically flirts with China’s foe, Japan, by dangling the return of the four Kuril Islands, which the Soviet Union seized from Japan at the end of World War II and which remain the main obstacle to a peace treaty between Moscow and Tokyo. In the latest round of that game, during Prime Minister Shinzo Abe’s visit this past January to Moscow, Putin, yet again, held out the possibility of normalizing relations by giving Japan back at least two of the islands, a gesture that Beijing likely resented, even though it did not lead to a breakthrough. Russia also exposed tensions with China within the Shanghai Cooperation Organization—an international body founded by Moscow and Beijing to promote economic and security cooperation among its members—when it invited another Chinese rival, India, to join the group. China tied the score by inviting India’s archrival (and the largest customer for Chinese weapons), Pakistan, to join.

Chinese-Russian military cooperation in particular is often held up as evidence of a growing closeness. Much has been made of the fact that Russia has sold China the latest version of its most advanced antiaircraft S-400 missile defense system. But India, Qatar, Saudi Arabia, and Turkey are next in line for the same equipment. And although China was the first to buy Russia’s most advanced Su-35 jet fighter, it will not be the last. Indonesia has contracted for 11 jets, Egypt has purchased dozens more, and India has reportedly considered buying 114 jets. Overall, from 2013 to 2017, India was a far likelier destination for Russian defense hardware than China, with 35 percent of Russian arms exports going to New Delhi, compared with 12 percent to Beijing.

Last year’s first joint Russian-Chinese land exercise, Vostok-2018, pointed to an imbalance in military cooperation not unlike the one in the two countries’ bilateral trade. Russia fielded between 75,000 and 100,000 soldiers and 1,000 aircraft; China contributed just 3,200 soldiers and six planes. Mathieu Boulègue of Chatham House argued that China was invited to participate not so much to bolster an alliance as to allay any Chinese concerns about the demonstration of force so close to its borders.

Indeed, the need for strengthening mutual trust between the putative allies was evident three years before Vostok-2018, during the Kremlin’s search for Internet policing technology. Following a series of high-level internal consultations, the Kremlin decided to buy data storage and servers from the telecom giant Huawei. Then, suddenly, the deal was off. The security services became so alarmed by the likelihood of Chinese espionage that they dared to challenge the Kremlin’s decision—and, even more surprisingly, managed to reverse it.

THE PUTIN-XI BROMANCE

In the end, the most promising portent of an alliance might be the personal relationship between the rulers of the two countries. The Putin-Xi bonhomie extends beyond surface pleasantries. They have met more than 25 times, far more frequently than either has with any other head of state. Xi recently called Putin his “best friend,” and his first visit as president was to Moscow. Putin has extolled his relations with Xi as the finest personal rapport he has with a foreign leader and fondly recalled celebrating his sixty-first birthday with Xi, over slices of sausage and shots of vodka, during the Asian-Pacific Economic Cooperation summit in Bali in 2013. Xi presented Putin with China’s very first Order of Friendship, designed to reward foreigners who contributed “personally to the PRC’s cooperation with the world community.” Putin hung a gold chain of the Order of St. Andrew, Russia’s highest civilian award, on Xi’s neck.

Sustained mutual affinities between the leaders of great powers almost always reflect not only overlap in geopolitical objectives but regime similarities. Both Putin and Xi preside over versions of state capitalism. Putin’s attraction to Xi is not hard to fathom: the Chinese leader is a fellow authoritarian who controls an enormous economy, which even in today’s downturn posts rates of growth of which Russia can only dream of. And China does this even while importing huge quantities of oil and gas.

Xi’s alleged respect for Putin likely stems from the Russian president’s deft defusing of several potentially explosive domestic political problems similar to ones Xi himself has faced. After taking office, Putin recentralized power within the Russian state, taming the oligarchs and wiping out the political strongholds of elected governors and presidents. Then, early in Putin’s third term in 2012, as he faced bleak economic prospects and rapidly declining approval ratings, he rejected the liberalizing reforms that his minister of finance suggested. Instead, Putin began to shift the foundation of his regime’s legitimacy from economic progress and income growth to the Kremlin as a defender of Russia against U.S. aggression and restorer of its past glory as a global superpower—a formula that the leading Russian political sociologist Igor Klyamkin has labeled “militarized patriotism.”

Concomitantly, Putin cracked down on public displays of dissent, called for the “patriotic upbringing of the youth,” and further intimidated civil society by signing a law designating many NGOs as “foreign agents,” rendering them social pariahs subject to harassment by the security and tax authorities. He made the Orthodox Church the guardian of national mores, and he personally guided the politicization of history textbooks, which began to whitewash the Soviet experience and rehabilitate Stalin.

On the road to his own chairmanship—and presidency for life—Xi has reprised Putin’s choices, in spirit if not always letter. He concentrated policymaking in the office of the party chairman, broke the baronies of regional party secretaries, and instigated a widespread “anti-corruption” campaign aimed at eliminating, or intimidating, potential critics and rivals. He abolished the de facto term limits for top party and government positions and tightened controls over media and book publishing.

As Chinese growth rates began to decline, Xi, like his “best friend,” spurned pro-market reforms and instead opted for his own version of Putin’s militarized patriotism: the reassertion of the Communist Party’s supremacy, the merger of “core socialist values” with “traditions of Chinese culture,” and a war on “spiritual pollution” that has led to heightened repression in Tibet and Xinjiang.

Similarly, “national rejuvenation” and the pursuit of the “Chinese dream” became central to the regime’s foreign policy discourse. In Xi’s words, China was facing “the most complicated … external factors in [its] history.” Admiral Sun Jianguo, a deputy chief of the General Staff of the People’s Liberation Army, described these factors as “invasion, subversion,” “undermining … stability,” and “interrupting socialist development.” Much as Putin had done, Xi transformed his country’s foreign policy from assertive to aggressively expansionist. The Chinese leader has militarized territorial disputes in the South and East China Seas and fortified Chinese-constructed artificial island chains with missile batteries and aircraft bases.

STILL PREMATURE

**Putin’s and Xi’s kinship** is real and formidable, but **even it may not be enough to overcome the obstacles to a genuine alliance. One such obstacle is** aptly described by a Russian expression, “istoriya s geografiey.” Literally **“a history with geography,”** the collocation refers to a seemingly straightforward matter suddenly turned into something involved and complicated. **History and geography militate against an entente cordiale between the two Eurasian giants. Authoritarian states sharing a 2,600-mile border**, with much of that boundary first imposed by imperial Russia on a weaker neighbor, **are hardly ideally set up to build mutual trust**.

**Reinforcing that barrier are very significant structural differences between the two countries’ economies, which result in their holding divergent stakes in the present world economic order. Confined largely to** exporting **oil and gas, Russia’s integration** in the world economy **is** at once quite **secure and quite limited**. Moscow can afford to rock the boat and to seek from Beijing a pointedly anti-Western, active, and committed military-political partnership.

**China’s economy**, on the other hand, **is the world’s second largest**—more than seven times the size of Russia’s—with exports that include advanced communication technologies, cell phones, computers, and cars. The country’s **trade with the U**nited **S**tates **and the E**uropean **U**nion **comes to** at least five **times the value of its Russian account. Because of** its **greater interdependence** with other leading world economies, **China’s system is** also **far more vulnerable to** geopolitical **disruptions** than Russia’s. And as a greater beneficiary of the liberal international economic order than Russia, **China is warier of antagonizing** that order’s ultimate guarantor, **the U**nited **S**tates. Skillfully promoted optics notwithstanding, **China is not likely to follow Russia into an anti-Western geopolitical crusade, preferring to cooperate with its alleged ally on a more modest scale** economically and especially militarily.

When I was living in Moscow in the fall of 1969, a rumor circulated that, returning from Vietnamese leader Ho Chi Minh’s funeral, Chairman of the Council of Ministers Alexei Kosygin stopped over in the Beijing airport for talks with his Chinese counterpart, Zhou Enlai. When the Chinese premier moved to embrace him, Kosygin drew back, saying, “Тhis is premature.”

Apocryphal or not, Kosygin’s injunction seems applicable today. **Despite claims to the contrary, the notion of a Chinese-Russian alliance is still premature**.

### CRBN

#### No bio or chemical weapon threat

Revill 17 – Dr. James, Research Fellow with the Harvard Sussex Program at SPRU. “Past as Prologue? The Risk of Adoption of Chemical and Biological Weapons by Non-State Actors in the EU”, Cambridge, pg. 626-642, <https://www.cambridge.org/core/journals/european-journal-of-risk-regulation/article/past-as-prologue-the-risk-of-adoption-of-chemical-and-biological-weapons-by-nonstate-actors-in-the-eu/6B824CDE0E25FD86AC3D0BD07822A743>, 09-29-2017

The second factor is “the perceived complexity of the innovation in terms of adoption and use”.40 This is important in the innovation literature, as Rogers remarked, “**[t]he complexity of an innovation,** as perceived by members of a social system, **is negatively related to its rate of adoption**”.41 Several **scholars of terrorist innovation have also highlighted the issue of complexity**;42 or, as Cragin et al have stated, “[h]ow simple or complex a technology appears affects perceptions of how risky it will be to adopt.”43

**In most cases terrorist groups appear to have largely opted for the simplest pathway towards the achievement of their goals and** **the weapons used tend to be vernacular, functional devices drawing on local and readily-available materials, rather than sophisticated, “baroque” technologies**. This is certainly the case with IEDs, the history of which is characterised largely by incremental innovations – although nevertheless frequently effective ones – with many means of delivery recycled from the past.44 Complexity can therefore be seen as important in the adoption of technology by terrorists generally, but is perhaps particularly acute in the case of CBW technology.

Some CBW can be relatively simple: “chlorine-augmented, vehicle-borne IEDs,” as employed by Al-Qaeda in Iraq (AQI) from 2006 to 2007 are not sophisticated weapons.45 Attacks on chemical production facilities, an apparent tactic of Serbian forces in the early to mid-1990s,46 employed relatively simple technologies – specifically explosives – with toxicity a secondary by-product. Direct contamination of food,47 drink48 or healthcare products49 does not require particularly sophisticated technology for the purposes of delivery – although may require some considerable skill to culture and scale-up a biological agent – and has been a common approach in European CBW incidents.50 Similarly, the contamination of water systems, something familiar to Europe,51 can also be relatively easily attempted. However, in most cases such methods of dissemination have generated results that are far short of the “mass destruction” that CBW are associated with, although this does not mean such a possibility can be ignored by those working on public health preparedness.

Although some relatively simple approaches could cause significant harm, **mass casualty attacks still require considerable expertise, something particularly acute in the context of biological weapons**.52 **The most effective route to weaponising biology is arguably** through the process of **aerosolising agents**, something recognised mid-way through the last century as opening up the theoretical possibility of using biological weapons on a gigantic scale.53

However, **realising such theoretical potential is difficult and it took states decades to develop more predictable biological weapon**s,54 **and even then such weapons were acutely vulnerable to environmental factors**.55 **For non-state groups such complexity has proven a significant barrier to CBW development**. By means of an example, **one of the best-resourced biological weapons programs**, that of **Aum Shinrikyo, failed variously because the group acquired the wrong strain, contaminated fermenters and were faced with insurmountable production and dissemination difficulties**.56 **There are of course exceptions, such as the 2001 anthrax Letter Attacks** in the US. However, **if one accepts the conclusions of the FBI that this sophisticated attack** with aerosolised anthrax in the US postal system **was perpetrated by a US biodefence researcher, Dr** Bruce **Ivins,**57 **it is an exception that proves the rule**.

**To circumvent** the difficulties with **aerosolisation, arguably one could use human-to-human transmissible** biological agents as part of a suicide bioterror operation. There are good reasons for concern over how crude suicide bioterrorists could employ such a tactic. **However, the use of highly contagious agents is also poorly predictable and would have to deal with social factors, such as the “spatial contact process among individuals”**, which can spell “out the difference between large-scale epidemics and abortive ones”.58

**The counter to this argument is the growing access to data and the changing human geography of the life sciences**. Some 83% of European households reportedly **are online, effectively allowing access to what is a growing body of available data on CBW, including so-called bioterrorist “recipes” and “blueprints**” that are available in both mainstream scientific as well as more subversive literatures online. It is also clear that there is a changing human geography in European life sciences (for peaceful purposes), with the emergence of 30 DIY-bio groups located in Europe59 and some 80 European teams in the international Genetically Engineered Machines (IGEM) competition in 2016.60 **This is compounded by reports that groups such as Daesh have deliberately sought to recruit foreign fighters “including some with degrees in physics, chemistry, and computer science**, who experts believe have the ability to manufacture lethal weapons from raw substances”.61

Whilst it would be unwise to ignore such developments, **there is a need for caution in looking at the extent to which new technologies and geographies will facilitate the adoption of chemical and biological weapons** by groups seeking to target European countries. First, **data is not information, and information is not knowledge, let alone the tacit knowledge required for CBW**.62 In many cases **a degree of determination and dedication will be required merely to separate online fantasy from fact and identify operationally useful information** (of relevance to the European context) from nonsense (or information pertinent to contexts other than Europe). Second, with new technologies there is the potential for such tools to enable some, but certainly not all, actors, and **even then new technologies bring new challenges. CRISPR, gene editing technology** is currently seen as a particular source of promise and peril, **which purportedly enables “even largely untrained people to manipulate the very essence of life**”.63 As much may be technically true, **yet “untrained people” would nonetheless require some guidance in identifying suitable areas of genetic structures to manipulate**. Moreover, **CRISPR would only get aspiring weaponeers so far, with the process of culturing, scaling-up and weaponisation still requiring considerable attention and interdisciplinary skills, typically generated through “large interdisciplinary teams of scientists, engineers, and technicians**”,64 **in order to be effective**.

Indeed, **for all the progress in science and technology, biological weapons are still not used, in part, because of the complexity of such weapons**; and the chemical weapons that are used today are largely the same as the chemical weapons of 100 years ago. As Robinson noted “It remains the case today that, in the design of CBW, increasingly severe technological constraint sets in as the mass-destruction end of the spectrum is approached: **the greater and more assured the area-effectiveness sought for the weapon, the greater the practical difficulties of achieving** it”.65

#### Loose nukes are empirically denied and have safeguards

Chapman 12 –Steve Chapman, writer for the Chicago Tribune, May 17, 2012, "The Implausibility of Nuclear Terrorism," <http://reason.com/archives/2012/05/17/the-implausibility-of-nuclear-terrorism>, AVD

The events required to make that happen comprise a multitude of Herculean tasks. First, **a terrorist group has to get a bomb or fissile material,** perhaps from Russia's inventory of decommissioned warheads. **If that were easy, one would have already gone missing.** Besides, **those devices are** probably **no longer a danger, since weapons that are not scrupulously maintained (as those have not been) quickly become what one expert calls "radioactive scrap metal." If terrorists were able to steal a Pakistani bomb, they would still have to defeat the arming codes and other safeguards designed to prevent unauthorized use. As for Iran, no nuclear state has ever given a bomb to an ally—for reasons even the Iranians can grasp.**

## Off Case

### Unilateral CP

#### US leadership is key – US CP

U.S. Mission China, 5-13-2022, https://china.usembassy-china.org.cn/u-s-fact-sheet-the-2nd-global-covid-summit/, "U.S. FACT SHEET: The 2nd Global COVID-⁠19 Summit:," U.S. Embassy & Consulates in China (ermo/sms, Acc:6-20-2022)

Expanded investments in bilateral global health security programs. To advance the Global Health Security Agenda and to accelerate the implementation of U.S. Global Health Security Strategy, the U.S. government will expand the number of global health security intensive support partner countries by eight this year, including to three new regions. This will improve countries’ capacities to prevent, detect, and respond to future COVID-19 variants and future health threats.

Expanding dose donation types to include boosters and pediatric doses to accelerate global vaccine coverage. The United States is expanding Pfizer vaccine dose types being donated globally to now include boosters and pediatric doses, as part of our 1 billion Pfizer dose donation commitment. This will help accelerate progress towards the 70% vaccination target and expand the availability of doses available for those at highest risk and for children globally.

Improving guidance for vaccine development to enhance protection. The United States, through the FDA, is committing to help align global health authorities and the WHO to provide advice to COVID-19 vaccine producers to inform which strains they use as the basis for vaccines, using predictions about the predominance of future strains and which strains will lead to vaccines that provide the broadest protection against unknown future variants.

Financing facility for COVID-19 vaccine and ancillary supply purchases and delivery through the U.S. International Development Finance Corporation (DFC). DFC has set up a vehicle to provide up to $1 billion to Gavi, the Vaccine Alliance, to provide bridge financing guaranteeing commitments from other donors. This will allow COVAX to react immediately in a crisis to purchase and deliver ancillary supplies and vaccines on behalf of developing countries participating in the COVAX Advance Market Commitment.

Advancing COVID-19 vaccine research and development through the Coalition for Epidemic Preparedness Innovations (CEPI). At least $50 million of the U.S. Government’s recent $150 million, 3-year pledge to CEPI will support COVID-19 vaccine research in addition to the development of other vaccines and countermeasures for future emerging infectious diseases, with the goals of making vaccines more broadly protective and easier to administer in low-resource settings.

Despite these commitments to combat COVID-19 and enhance future preparedness against health threats, there is more work to be done to ensure the United States can continue to lead, to make Americans and the world safer. President Biden continues to urge Congress to act promptly to provide supplemental resources. Without additional emergency funding, the United States will be unable to purchase additional life-saving treatments for the American people. The United States will be less able to stop the spread of possible new variants from around the world. The United States will be unable to keep vaccinating the world against COVID-19 and getting shots into arms, to save lives here at home and abroad.

### Politics Link

#### Panviral is politically contentious – CEPI solves and avoids the problem

Jennifer Kahn 4-21-2020 UC Berkeley Graduate School of Journalism “How Scientists Could Stop the Next Pandemic Before It Starts” New York Times Magazine <https://www.nytimes.com/2020/04/21/magazine/pandemic-vaccine.html> (ermo/sms, Acc:6-22-2022)

Governments, meanwhile, have been reluctant to fund panviral development — both because it’s expensive and because the rewards can feel remote, especially as many diseases originate in other countries. “We don’t prevent well; we respond well,” Daszak notes. “Remember when Obama got $5 billion for the Ebola outbreak in West Africa, and U.S. troops went to help fix the problem? That’s heroic. How heroic is it, three years before Ebola, to say, ‘We’re going to fund a massive program in West Africa to help these poor countries get ready in case an outbreak happens?’ He’d be laughed out of the room!”

Global nonprofits like the Gates Foundation have tried to step into this funding void. The foundation has supported GAVI, an international alliance that helps vaccinate children in poor countries and spearheaded a fund to fight H.I.V., tuberculosis and malaria worldwide. Mark Suzman, the chief executive of the Gates Foundation, says that when governments and companies do pull together, the focus is often on projects like these rather than “forward-looking” issues like pandemics or climate change. One exception, he says, has been CEPI, the Coalition for Epidemic Preparedness Innovations, an NGO that was founded in 2017 to coordinate and finance the development of new vaccines for diseases that might lead to a pandemic. When it started, Suzman told me, CEPI was a low-profile project: “It was really a response to the Ebola epidemic of 2014 and 2015. Now, of course, it looks incredibly farsighted.”

CEPI works by identifying the most promising research, and then connecting it to industry and government resources, in order to bring multiple sets of “candidate” vaccines through initial clinical trials. The goal is to create a stockpile of potential treatments for known coronaviruses, hemorrhagic fevers and other global threats that could quickly go into production in the event of an epidemic. Daszak noted that CEPI is running a trial for a vaccine against Nipah virus, a zoonotic virus — one that exists in animals but can infect people — which can cause acute respiratory illness and fatal encephalitis. “This is the classic example,” Daszak says. “So far, there have been only a few outbreaks, so the market is minuscule: a few thousand people a year get it, in Malaysia or Bangladesh. But it infects a wide range of animals, and that means it’s likely to keep crossing over into people. And if it ever broke out, it could be a pandemic with very lethal consequences.”

The group also funds technologies aimed at “Disease X” (the potentially pandemic viruses that we have yet to discover) with the goal of faster vaccine development should a totally new threat emerge. As Jake Glanville, whose company, Distributed Bio, received a grant from Gates Foundation to create a universal flu vaccine, told me, “This is how we win the forever war, and not just battles against these pathogens.”

CEPI isn’t the only group trying to find solutions to the drug and vaccine problems. In the United States, a federally funded university collective called the Antiviral Drug Discovery and Development Center (AD3C) was created in 2014, with the goal of developing drugs for influenza, flaviviruses (including West Nile), coronaviruses and alphaviruses. Like CEPI, AD3C partners with pharmaceutical companies but focuses on salvaging and reformulating promising drugs that might be valuable but that the company isn’t interested in pursuing. (When Gilead discovered that remdesivir worked on coronaviruses, for instance, the treatment was routed to AD3C, which enlisted scientists at Vanderbilt University and the University of North Carolina to repurpose it.)

### Securitization Links

#### Excessive securitization undermines experimental governance frameworks

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3.2. Stage 1: Achieving Consensus on a General Global Governance Framework with

Open-Ended Principles

The first links of the experimental governance model is to invite as many stakeholders as possible to participate in the discussion, to construct an authoritative international platform for the discussion, to set an open-ended principle, and to form a legally binding agreement. The Biological Weapons Convention of the United Nations is an open-ended model platform. It can establish communication among countries, and create opportunities for other non-state actors to participate in discussions through the mechanism of experts’ meetings, side events and best practice sharing in order to systematically monitor and review developments in science and technology. We believe that for the risk of dual-use biotechnology, all stakeholders need to reach a consensus on three principles: (1) risk communication, (2) process transparency, and (3) subjectivity.

First, all States Parties should regard multi-party risk communication as the basic principle of governance. The National Research Council of the U.S. defines “risk communication” as an “interactive process in which individuals, groups, and institutions exchange information and ideas” [51]. Risk communication plays an important role in resolving conflicts caused by differing perceptions, as there is generally disagreement among the public, government officials, scientists and industries about the nature and severity of risks [52]. Under the media rendering of dual-use biotechnology in animal soldiers, genetic weapons, and super soldiers, the public become fearful of these artificial creatures as “unknown, frightening, uncontrollable, catastrophic and may affect future generations.” Due to this bias, politicians and the public tend to pay more attention to the risk of bioterrorism than to other kinds of risks [53]. Therefore, it is essential to strengthen and extend contact and communication among biotechnologist, policy makers, social scientists and the public.

#### Consultation CP vs experimentalist governance

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3.3. Stage 2: Countries Take Actions Based on Local Conditions Led by the General Global

Governance Framework

Under the framework of the above-mentioned principles and objectives, the experimentalist governance model requires that grassroot practitioner should be provided with the power to act in accordance with local conditions. We believe that in view of the characteristics of dual-use biotechnology risks, different countries need to promote three aspects of work according to their actual conditions.

First, it is important to seek a dynamic balance between “hard law” and “soft law”. Facing the dual-use risk of biotechnology, countries need to find a dynamic balance between “hard law” and “soft law”. Soft law consists of democratic, open, universal and normative rules through the participation of stakeholders to regulate the social relations in biosafety governance, including its guidelines, codes, standards, and norms. It is therefore necessary to protect social and public interests, encourage scientific and technological research and industrial innovation, and ensure that the development of dual-use biotechnology is in accordance with the law and regulations. Due to the difficulty to meeting the demands for legal adjustment of new social contradictions caused by the dual-use risk of biotechnology by simply creating high legislative costs alone, and existence of complicated biological safety risks, no country has a panoramic understanding of the possible consequences of such risks, and some hidden dangers of such risks are far from being fully exposed. It will be increasingly difficult to supervise biotechnology as it gains momentum, as it is necessary to keep up with biotechnology through soft law, improving governance efficiency through “easily adjustable and easily controlled” mechanisms, and forming a policy reserve of national governance rules. Noticeably, integrating hard and soft law to create a prevention network needs a dynamic adjustment mechanism [54]. The most valuable, promising results of dual-use biotechnology are often produced in the early stage of research. Therefore, application of soft law, such as a code of conduct and professional rules, should initially predominate. As new technologies are being industrialized, regulation through hard law should be strengthened.

Second, to develop a dynamic consultant mechanism with multi-stakeholders in accordance with specific national conditions, the governance of emerging technologies should be the final outcome of interactions of socio-political management under the collective consultation of social actors [55]. This interactive mechanism should balance and coordinate the views and propositions between scientists and other stakeholders, thus deepening trust and integration. At the same time, biotechnologist can be encouraged to discuss issues such as social risk, which will be an important part of their scientific research activities in the future [56]. When such interactions produce a mutual understanding and shared vision, these biologists will form an “autonomous network” in which several entities and regulatory agencies will pool their social resources, intellectual expertise and interests [57]. With the advancement of dual-use biotechnology, this autonomous network must have the capability of dynamic learning and adaptive capacity. Multi-level organizations, including government regulatory departments, scientific research institutions, and industrial associations should carry out popularize science to improve the public understanding of dual-use biotechnology, enhancing enthusiasm for participating in and supervising the development of dual-use biotechnology. These activities can build public confidence in dual-use biotechnology and create a social environment more conducive to its sustained and healthy development. In short, government supervision should mobilize social forces, promote the orderly participation in the governance of the dual-use risk of biotechnology so that those social forces will jointly assume responsibility, formulate the rules, minimize risks and share in the outcome.

Third, to implement dynamic supervision of hierarchical management and risk assessment according to actual needs, each country should engage in hierarchical management and provide dynamic supervision mechanism for risk assessment. The idea of implementing hierarchical management of risks in the field of biosafety has become a common choice of major countries throughout the world yet have different characteristics. The “Biosafety Law of the People’s Republic of China” of 2020, emphasizes that “the state implements classified management on biotechnology research and development activities,” and that biotechnology research and development activities should be classified into high-, mediumand low-risk categories according to the amount of harm these activities may cause to public health, industry, agriculture, and the environment [58]. The “Dual-Use Research of Concern” (DURC), conducted by the National Science Advisory Board for Biosecurity (NSABB), focuses on 15 hazardous biological agents or toxins and seven types of partial dual-use research [2]. Furthermore, according to a country’s own situation, it is necessary to develop risk assessment models by means of scenario analysis for policy makers to formulate and revise the laws and regulations [59,60]. In 2012, Bansak and Tucker proposed a 3 × 3 matrix model for risk assessment of dual-use biotechnology based on two key variables: abuse risk and controllability (Table 1). They then divided the abuse risk variables into four types: availability, vulnerability, potential hazard, and potential abuse crisis. The abuse risk can be high, medium, or low. Countries can modify the key variables of the model as needed.

### Inherency

#### Current NATO actions solve the advantage – reject plan for over-extending NATO’s role

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Alliance Response to COVID-19

Most of the responsibility for maintaining the health and safety of their armed forces lies with the member states, not with NATO. That is not to say that NATO does not have a role to play in pandemic response, and member states heavily affected by COVID-19 quickly turned to the Alliance for assistance.

NATO established the Euro-Atlantic Disaster Response Coordination Centre (EADRCC) in June 1998 as a “clearing-house mechanism for the coordination of requests and offers of international assistance amongst NATO Allies and partners.”2 The EADRCC originally covered the geographical area of 50 countries, including NATO allies and the signatories of the Partnership for Peace. Over time, its mandate widened to cover requests for assistance in the event of a major chemical, biological, radiological, or nuclear incident or attack, and gradually extended to cover the territories of NATO partners from the Mediterranean Dialogue and the Istanbul Cooperation Initiative, as well as of other partners across the globe. Currently, the EADRCC’s mandate covers the geographical area of 70 countries.3 The EADRCC has responded to events including Hurricanes Harvey and Katrina in the U.S., forest fires in Israel and Latvia, Ebola in West Africa, H1N1 swine flu in Bulgaria and Ukraine, and flooding in the Balkans.4

During the pandemic, the EADRCC is helping to coordinate assistance based on requests and availability of supplies, such as Czech and Turkish relief aid to Italy and Spain, including personal protection equipment and disinfectants.5 In April, NATO foreign ministers directed Supreme Allied Commander Tod Wolters to help coordinate matching requests for aid with offers of assistance, as well as to use excess airlift capacity to ease transport of essential supplies across borders.6 Secretary General Stoltenberg stated: “He [Wolters] will also implement simplified procedures for rapid air mobility, in coordination with Eurocontrol, using the NATO call sign for military relief flights.”7 Garamone, “NATO Takes Steps to Combat Coronavirus.” Additionally, NATO’s Support and Procurement Agency provided field hospital tents and equipment to Luxembourg to increase capacity.8

NATO’s Strategic Airlift Capability (SAC), “a multinational programme that provides assured access to strategic military airlift capability for its 12 member nations,”9 was leveraged for pandemic response. Examples include cargo flights from Europe to South Korea to collect essential medical supplies for the Czech Republic, Hungary, Romania, and Slovakia.10 In April, SAC capabilities helped to transport ICU beds to the Dutch-controlled part of the Caribbean island Sint Maarten.11 Other examples of Alliance responses to COVID-19 include an Italian team from NATO’s Support and Procurement Agency working with a private company that created printed 3-D connectors to convert snorkeling masks to ventilator masks.12 In April, the NATO Mission in Kosovo (KFOR) helped to transport gowns, masks, and sanitizers to North and South Mitrovica in Kosovo.13

In addition to NATO facilitation, allies have banded together to assist one another during the pandemic. Poland and Albania sent doctors to Italy, the German air force helped to transport patients from France and Italy to German hospitals for treatment, Germany donated ventilators to the U.K., the United States donated medical supplies to Italy, and Estonia donated masks and disinfectant to Spain and Italy, to name several examples.14

Governments across the alliance have called upon their militaries to assist with civilian mitigation and pandemic response. A few of the myriad examples include French armed forces helping to set up additional capacity in the form of a field hospital,15 with the French air force even flying some patient transfers.16 In the United States, two U.S. Navy hospital ships, the USNS Comfort and the USNS Mercy, docked in New York and Los Angeles to alleviate hospital overcrowding.17

#### NATO leadership on Covid should be in other areas – solves the aff

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Responding to Pandemics

While most of the responsibility for responding to pandemics lies with individual member states, NATO does have a role to play—both in supporting member state mitigation measures, as well as ensuring the readiness of Alliance forces and responding to the opportunism of adversaries. When considering its role in responding to pandemics, NATO should:

Reaffirm the importance of individual member states keeping their service members healthy and fit. Ensuring the health and welfare of service members and their families is the first essential role of any armed force. This is a responsibility solely in the hands of the member states. However, if the member states fail at this task there are serious consequences for the Alliance.

Help the member states to manage the crisis when appropriate. This is where the EADRCC and NATO’s SAC can play a role.

Maintain readiness through training. As a military alliance, NATO’s responsibility during any pandemic is to ensure the readiness of Alliance forces to carry out combat operations at a moment’s notice. If training exercises must be canceled or curtailed, they must be rescheduled as soon as possible. Also, virtual training events must replace canceled real-life training.

Consider lessons from the COVID-19 pandemic. NATO has taken a leading role in helping to facilitate the transfer of needed equipment, personnel, and supplies between member states. This is critically important work that should continue during the current pandemic. NATO’s upcoming strategic review should recommend an expert review of NATO’s response to COVID-19 to assess the success and timeliness of NATO’s response, and issue recommendations to the Secretary General for preparing for future pandemics.

Prepare for future waves. While the current wave of the coronavirus pandemic is likely to abate by the summer, the potential remains for future waves of the virus especially during the fall and winter. Therefore, NATO should continue to prepare and plan for additional waves, working with member states should recurring outbreaks materialize.

Rebut and refute Chinese and Russian disinformation. The current pandemic has unleashed sustained efforts by both China and Russia to cast commercial deals and opportunistic forays as altruistic aid. The Alliance must immediately and forcefully refute and rebut the prevailing Chinese and Russian narrative with factual evidence, while highlighting the real and valuable role that NATO has played in pandemic response, and the true aid and assistance that allies have provided for one another.

Conclusion

NATO’s response to the coronavirus pandemic thus far has shown that the Alliance can indeed play a positive supporting role in helping member states respond to health emergencies, especially in the transatlantic community. The lessons of COVID-19 also underscore that pandemics pose a risk to the health and safety of service members and their families, while posing a challenge to maintaining military readiness.

#### NATO solves now without plan

NATO North Atlantic Treaty Organization, March 2021, https://www.nato.int/nato\_static\_fl2014/assets/pdf/2021/3/pdf/2103-factsheet-COVID-19-en.pdf, " NATO’s Response to the COVID-19 Pandemic" NATO Fact Sheet (ermo/sms, Acc:6-20-2022)

NATO’s Response to the COVID-19 Pandemic

NATO Allies stand in solidarity in response to the Covid-19 pandemic. This is an unprecedented global challenge, which affects us all.

NATO and Allied military personnel have been supporting civilian efforts - providing military airlift, setting up field hospitals, sharing medical expertise, and helping to develop innovative responses. This is helping to save lives.

While we continue to take all the necessary measures to protect our armed forces, NATO’s operational readiness remains undiminished. The Alliance continues to deliver effective deterrence and defence. Our forces remain vigilant and prepared to respond to any threat.

Measures in place

The Euro-Atlantic Disaster Response Coordination Centre (EADRCC) is NATO’s main civil emergency response mechanism.

The Centre operates on a 24/7 basis, coordinating requests and offers of assistance. It is helping to coordinate assistance, including medical and financial support.

In June 2020, NATO Defence Ministers decided on a new Operations Plan to ensure that the Alliance is ready to help Allies and partners. We have established a NATO Pandemic Response Trust Fund to enable us to quickly acquire medical supplies and services. The NATO International Staff is managing the NATO Pandemic Response Trust Fund.

The NATO Pandemic Response Trust Fund maintains an established stockpile of medical equipment and supplies to be able to provide immediate relief to Allies or partners in need. The NATO Support and Procurement Agency (NSPA) is managing the purchase and storage of relief items for the stockpile in the NSPA Southern Operational Centre in Taranto, Italy. Romania has also offered to host warehousing facilities.

Several Allies have made donations of medical equipment to the stockpile, including ventilators from the United States, Hungary and Slovakia, personal protective equipment from Germany and surface disinfectant from Latvia.

Since late last year, NATO Allies Albania, Czech Republic, Montenegro and North Macedonia received 200 ventilators and ventilators supplies from the stockpile. The Czech Republic received additional assistance with the deployment of military medical personnel from the United Kingdom and Germany. And a total of around 1, 5 Million EUR in medical supplies is being provided to Albania, Montenegro and North Macedonia. This follows requests for assistance from the four countries to NATO’s EuroAtlantic Disaster Response Coordination Centre.

Additionally, Slovakia donated and delivered four pulmonary ventilators to North Macedonia in response to an urgent request for assistance received in January 2021. Also partners have benefited from the Pandemic Response Trust Fund. Medical supplies have been delivered to the Republic of Moldova, Tunisia and Ukraine, whilst additional packages of assistance are being provided to Bosnia and Herzegovina an Iraq.

Sixteen Allies have already made financial contributions to the NATO Pandemic Response Trust Fund, including Albania, Belgium, the Czech Republic, Denmark, Germany, Iceland, Italy, Lithuania, Luxembourg, the Netherlands, North Macedonia, Norway, Slovakia, Turkey, the United Kingdom and the United States.

#### Inh & alt causes

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With the outbreak of COVID-19 pandemic, for the first time in its history NATO had to face an attack against each of its member states at once. Given the backdrop of political tensions within the alliance in the past few years, there were not many reasons to be optimistic about NATO’s response, especially at a moment when trans-Atlantic allies were failing to coordinate on travel restrictions and competing over supplies of medical equipment. In spite of this, NATO was able to leverage its experience in crisis management and disaster relief to provide two kinds of responses.

First, NATO focused on ensuring the continuity of its operations while protecting its personnel, to prevent the health crisis from impacting readiness. Most NATO missions were preserved, but some encountered temporary suspensions. Military drillings were redesigned, including the U.S.-led NATO exercise DEFENDER-Europe 20, to prevent further spread of the virus through movement of ground troops. In addition, NATO’s public diplomacy branch multiplied efforts to counter disinformation from China and Russia.

Second, amidst a low point for international cooperation, NATO set up a COVID-19 Task Force aimed at coordinating the delivery of medical aid across and beyond the territory of the alliance. Such actions, although performed through the means of NATO member states and relatively limited in scope, were an important testimony of the reactive capability of the alliance and of solidarity between member states. Yet, it is reasonable to imagine that more could have been done if the organization did not have to overcome political tensions across the Atlantic, and member states had cooperated from the beginning under the leadership of NATO’s strongest member.

From this experience NATO could draw important lessons, from improving resilience to external threats to investing in readiness for catastrophic scenarios like a global pandemic. The fact that COVID-19 will continue disrupting the global economy and supply chains will have a negative impact on countries’ defense spending and defense industries. However, given the resilience the alliance has shown so far, COVID-19 will not be the determining factor for the future of NATO. Instead, the chances for NATO to operate efficiently vis-à-vis growing global challenges will ultimately depend on a relaunch of transAtlantic relations.

#### SQ solves resilience - exercises

NATO, 6-17-2022, North Atlantic Treaty Organization, https://www.nato.int/cps/en/natohq/topics\_132722.htm, "Resilience and civil preparedness – Article 3 ," NATO (ermo/sms, Acc:6-17-2022)

Renewed attention to resilience is leading to increased collaboration between civil and military stakeholders. Collaborative arrangements between them are proving of mutual benefit, both in peacetime and crisis. For example, as the COVID-19 pandemic has shown, military assistance to civil authorities has been of critical support when civilian resources are under severe stress.

Exercises are an effective way to conduct stress tests of national arrangements, in particular when it comes to large-scale contingencies such as an attack with weapons of mass destruction or dealing with certain aspects of hybrid warfare. In this respect, resilience is an important area for analysis, and new assessment tools are being developed in order to improve how the Alliance and its members identify vulnerabilities, evaluate their preparedness and improve their capacity. To test Allies’ responses to crisis situations, civil preparedness elements are being built into NATO’s military exercises at all levels, from strategic-level crisis management exercises and high-visibility exercises to lower-level command-post and field exercises.