# \*\*Human Germline Genetic Engineering\*\* Affirmative



#### Definition of germline gene editing

[Helen Regan](https://www.cnn.com/profiles/helen-regan), [Rebecca Wright](https://www.cnn.com/profiles/rebecca-wright) and [Alexandra Field](https://www.cnn.com/profiles/alexandra-field-profile), CNN The scientist, the twins and the experiment that geneticists say went too far Updated 7:04 AM EST, Sat December 1, 2018 https://www.cnn.com/2018/11/30/health/gene-edited-babies-he-jiankui-intl/index.html

Germline gene-editing refers to genetic changes in every cell, that will be passed on to future generations. This is different to somatic (body) cell gene-editing, whereby only existing cells are targeted and the changes made are not passed on to future offspring.

## 1AC

#### Plan: The United States federal government should substantially increase its security cooperation with the North Atlantic Treaty Organization in the area of biotechnology by banning the use of germline genetic engineering in humans.

#### Contention 1: Ethical Responsibility

#### Human germline genetic engineering refers to genetic changes made in every cell that will be passed on to future generations.

#### Subpoint A: Human germline genetic engineering is fundamentally unethical. We have four internal links.

#### 1 Mosaicism & Autonomy

Krizia Rivera 2020 Genetic Engineering, Lack of Regulation in the United States of America and its Potentially Problematic Applications <https://scholarship.shu.edu/cgi/viewcontent.cgi?article=2092&context=student_scholarship>

The ethical concerns would probably be best understood under bioethical standards. Central to the practice of medicine and biological sciences are “The Four Principles of Bioethics, 75 ” also known as the four-principles approach. 76 This approach was developed by two American philosophers, Tom Beauchamp77 and James Childress. 78 This approach has long held that at the root of biomedical ethics are the following four principles: respect for autonomy, beneficence, non-maleficence and justice. These principles will lay the fundamental groundwork for each foreseeable potential human rights violation I state below. Personal autonomy means the right to make his or her own choice79. This principle will be violated if germline editing is allowed, mainly because it affects future generations as discussed above, given their obvious lack of consent as to inherited modified genes. The creation of a heritable modified genes has unpredictable implications on humankind and evolution80. In a 2018 commentary article authored by professors and research scholars noted there may be unintended consequences to editing out harmful mutations in humans: Here we simply emphasize to express that it may have effect modification of mutations in germ cell will ultimately eliminate that mutation in the next generation, which will deter the on-going human evolution. Mutations are an essential part of evolution, whose pros and cons cannot be judged instantly. The mutations, which seem deleterious today, may have inclusive fitness tomorrow. Mutations, which seem harmful today, may be the nature’s preparation for tomorrow. The somatic cell modifications in humans whereas provide answer to many ailments, the germ line changes until outcomes of such modifications are uncontrolled would continue to raise ethical concerns. Thus, the researchers need to be doubly cautious and some stringent regulations should be framed regarding the various aspects of germ line gene modifications and any potential conflict with nature for future outcome.81 Moreover, the elimination of a gene or modification of a gene could affect the genetic diversity of the human population82. The United Nations has defined genetic diversity as, “[t]he variation in the amount of genetic information within and among individuals of a population, a species, an assemblage, or a community.” 83 Genetic diversity is our inherited toolkit, and the more varied the genes are in our toolkit as a population, the higher our survivability will and continue to be. “Genetic diversity has a direct relation to the fitness and survivability of various species and populations; as genetic diversity decreases within a population, so does the fitness and survivability of that population.” 84 Notably, we do not understand the far-reaching potential of a gene, whether it is consider a harmful mutation today or not, it may serve a purpose tomorrow. Employing such a germline edit that would be inherited by future generations without their consent. The lack of medical consent of future generations is a contravention of human rights as it breaches their physical integrity, their ability to make choices as to their own bodies. Foreseeable issues as to consent have been posed by several scientists. Per legal standards and clinical ethics, it’s long been established that parents are the best and most appropriate decisionmakers over their children until they have reach adulthood. But this presumption is not perfect as individuals who have disagreed with the medical decisions of their parents is well-documented. For example, “wrongful life” suits85 or individuals who have disagreed with their parent’s surgical decisions about sexual assignment or craniofacial disorders.”86 There are also groups of people who resist the idea of having their medical status defined as a “disability,” and published cases of patients who are documented as stating they would not want to correct their medical condition if given the choice.87 The two principles, beneficence and non-maleficence, derives from the well-known Hippocratic Oath, “to help and do no harm. 88” This age-old oath was established in the 4th century BCE by Hippocrates, a physician-philosopher. As with any new scientific discovery, the true long-term effects of CRISPR cannot be realistically gasped. Currently, the known possible negative effects of genetic engineering are off-target mutagenesis 89,90 and mosaicism9192,93 . Applying a benefit-burden analysis, we must rely on alternative safer methods, such as, preimplantation genetic diagnosis, until we can reasonably and reliably predict the true effects of CRISPR. Lastly justice, is a concept concerning fairness and equality. The more pragmatic concern involves a lack of accessibility, where “therapies,” may be developed using this technology, but may only be accessible to the wealthy would add to the already great wedge between socioeconomic classes.

#### 2 The gene drive

WESLEY W. CHEN June 30 2019 HUMAN GERMLINE GENE EDITING: ENGINEERING AN UNSTOPPABLE TRAIN https://mylaw2.usc.edu/why/students/orgs/ilj/assets/docs/28-2-Chen.pdf

One practical application of gene editing in eugenics is the idea of the gene drive.119 The gene drive is a genetic phenomenon whereby certain genes with “‘selfish’ genetic elements”—which provide hereditary advantages— increase the inheritance of the gene in subsequent generations within a population.120 The idea is that by using gene drives for advantageous characteristics, scientists can utilize a longitudinal system to address “major biological problems related to public and environmental health.” 121 In practice, a gene drive involves engineering specific genetic traits in a few individuals and propagating the traits throughout the local population through generations of reproduction.122 Due to difficulties surrounding engineering an effective gene drive system, gene drives have only been used in a handful of organisms, including yeast,123 fruitflies,124 and mosquitoes.125 With the evolution of CRISPR-Cas9 technology, however, development of gene drives are becoming increasingly viable. For example, historically it has been extremely difficult to create transgenes in mosquitoes that would be passed on to subsequent generations.126 But in November 2015, scientists reported that they had successfully engineered a gene drive in mosquitoes using CRISPR-Cas9, which resulted in inheritance of the mutant gene in 99% of all offspring.127 CRISPR-Cas9 technology has been subsequently used to engineer other mosquito gene drives to combat the spread of malaria.128 While the idea of using gene drives to eliminate malaria in wild mosquito populations seems promising, the application of gene drives in humans is not so straightforward. One of the gene drive’s greatest advantages is also one of its greatest weaknesses—its power to change an entire ecosystem.129 Theoretically, once a dominant gene drive has been introduced to favorably bias its inheritance, it will inevitably spread throughout the population unless an accessible off switch is programmed into the gene drive. In mosquitoes, an organism much simpler and more laboratory-tested than humans, such a dramatic genetic change would still have unforeseeable impacts on the ecosystem and the mosquito’s long-term survival in the wild. This illustrates both the causal uncertainties and the moral-conceptual “is this a benefit or risk” uncertainties in this field. Even the causal uncertainties aren’t purely empirical but have value components (as in proximate cause). In humans, these issues are further complicated in that it would be impossible to test the effects of gene drives on human adults in a laboratory setting. In a perfect scenario, a gene drive without any adverse or off-target effects could be introduced into the human population to battle disease and ubiquitously enhance the human race. Even in such cases, however, would it really be a good idea to drive the same genetic characteristic throughout society? One of nature’s best survival tools is genetic diversity.130 An advantageous trait one day may be a weakness another day when there are new diseases or different environments. The tug-and-pull between whether a genetic modification is helpful in the short-term or detrimental in the unforeseeable future highlights the blurred “line between diversity and disability.”

#### 3 Human dignity

Scott J. Schweikart, Global Regulation of Germline Genome Editing: Ethical Considerations and Application of International Human Rights Law, 43 Loy. L.A. Int'l & Comp. L. Rev. 279 (2021). Available at: https://digitalcommons.lmu.edu/ilr/vol43/iss3/6

The larger question thus becomes: what constitutes “human dignity?” One answer is that human dignity is “respect derived automatically from one’s status as a human being.”75 Therefore, some scholars argue that alterations to the genome for “enhancement” purposes is a type of transhumanism that violates human dignity.76 Indeed, this line of thinking supports the declaration as an ethical tool that can be used to protect against violations of “human dignity” conducted via genetic alterations meant to enhance a human being.77 As some scholars argue, violations of human dignity via enhancement genome editing calls into question the personhood status of individuals with an altered genome, thus yielding profound implications on the rights and status of such individuals.78 This is particularly acute under a theory of “personhood” that emphasizes biology and genetics as determinative. Such a worldview that “implicitly assumes that the totality of human DNA is the source of a human essence” will invariably harm “the biological legacy” of children with germline modifications and risk “their entitlement to human rights and legal protections.”79 In other words, human rights protections may be in doubt because germline modified individuals could potentially be deemed as possessing a trans-altered personhood status, thus removing them from the normative status entitled to such protections.

#### 4 Eugenics

Darnovsky, Lowthorp and Hasson, 2018 [Marcy Darnovsky](https://www.geneticsandsociety.org/user/25) is the executive director of the [Centre for Genetics and Society](https://www.geneticsandsociety.org/) (CGS). [•](https://www.openglobalrights.org/leah-lowthorp/) [Leah Lowthorp](https://www.geneticsandsociety.org/user/28) is a program manager at the [Centre for Genetics and Society](https://www.geneticsandsociety.org/) (CGS). [•](https://www.openglobalrights.org/katie-hasson/) [Katie Hasson](https://www.geneticsandsociety.org/contributor/katie-hasson) directs the Genetic Justice program at the [Centre for Genetics and Society](https://www.geneticsandsociety.org/) (CGS). Reproductive gene editing imperils universal human rights ORIGINALLY PUBLISHED: February 15, 2018 https://www.openglobalrights.org/reproductive-gene-editing-imperils-universal-human-rights/

What do recent advances in molecular genetics have to do with human rights? Quite a lot, it turns out. And key human rights documents have recognized this for some time. Over the past few years, new “gene editing” tools that are cheaper, easier to use, and more accurate than previous ways to change living organisms’ DNA have rapidly spread to labs around the world. Scenarios that previously seemed far-fetched or far off now confront us, including the prospect of directly controlling the genes and traits that are passed down to future children and generations. Since 2015, a half dozen research teams, in China, the UK, and the United States, have separately reported efforts to modify specific genes in human embryos. These developments have brought us to a critical juncture: human reproductive gene editing now poses a threat to the human rights of future generations. Gene editing for human reproduction carries huge social risks. It has the potential to threaten the health and autonomy of future generations, to exacerbate existing social disparities, and to lay the basis for a new market-based eugenics that would fuel discrimination and conflict. A [debate](https://www.theguardian.com/science/2015/dec/04/human-gene-editing-is-a-social-and-political-matter-not-just-a-scientific-one) about whether to risk these outcomes is now raging, though mostly in the publications and meetings of scientific and professional organizations, far away from public view and civil society attention. It is essential that human rights advocates make their voices heard in this debate. Imagine a world where wealthy parents could purchase genetic enhancements to give their children real or alleged advantages, where children’s futures were thought to be determined by their genes, and where babies were labeled at birth as “good” or “bad” based on their DNA. What would be the implications for human rights, and for the right of children to decide their own futures? Gene editing for human reproduction, also known as human inheritable or germline modification, involves making changes to the DNA of human sperm, eggs, or embryos. It is distinct from efforts [to use gene editing as a medical treatment](https://www.wsj.com/articles/china-unhampered-by-rules-races-ahead-in-gene-editing-trials-1516562360), which target the somatic or non-reproductive cells of existing patients. While somatic gene editing, or “gene therapy,” aims to treat or cure disease in living people, reproductive gene editing is not a medical treatment. It would create a new person with a pre-determined genetic make-up that would be inherited by all of their descendants. Gene therapy, if it can be made safe, effective, and broadly affordable, will be a welcome addition to modern medicine. Germline gene editing, by contrast, doesn’t treat anyone. It creates future children, and deprives them and future generations of the choice to consent to modifications made to their DNA. And if the goal is to avoid the transmission of inheritable disease, it is unnecessary. Where there is risk of passing on a serious genetic mutation, an existing embryo screening technique (pre-implantation genetic diagnosis or PGD), can in almost all cases eliminate the unwanted gene variant from the family’s lineage. To be sure, embryo screening for PGD raises challenging ethical questions about what conditions are considered “unworthy of life.” But it is far safer and less socially and ethically fraught than manipulating the human germline. Around twenty years ago, an earlier wave of concern about human germline modification swept through scientific and policy circles, and popular culture. The 1997 dystopian film [GATTACA](http://www.imdb.com/title/tt0119177/) depicted a brutal society that privileged the genetically enhanced over the unenhanced. Similarly, Princeton University molecular biologist Lee Silver made news with his vision of a genetically stratified society, [predicting](https://repository.library.georgetown.edu/handle/10822/523362) that “the already wide gap between wealthy and poor nations could widen further and further with each generation until all common heritage is gone.” During the same period, concerns about safety, human rights, and the potential for a high-tech, market-based eugenics prompted more than 40 countries—including nearly every nation with a significant biotech sector—to prohibit the modification of genes passed down to subsequent generations. Several important international human rights instruments also concluded that human germline modification would violate human dignity, a concept at the core of human rights. One of these, the Council of Europe’s 1997 European [Convention on Human Rights and Biomedicine](https://rm.coe.int/168007cf98) (also known as the Oviedo Convention), is a binding international treaty. Its Article 13 explicitly prohibits interventions “seeking to introduce any modification in the genome of any descendants.” Another, UNESCO’s 1997 [Universal Declaration on the Human Genome and Human Rights](http://www.unesco.org/new/en/social-and-human-sciences/themes/bioethics/human-genome-and-human-rights/), asserts that “the human genome underlies the fundamental unity of all members of the human family, as well as the recognition of their inherent dignity and diversity,” concluding in Article 24 that “germ-line interventions” could be “contrary to human dignity.” In fact, an important [motivation](http://unesdoc.unesco.org/images/0011/001144/114488E.pdf) for the [Universal Declaration of Human Rights](http://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf) was an abhorrence of the eugenic abuses perpetrated by Nazis during World War II. The same logic provides the foundation for the consumer-based eugenics that would result if germline modification were allowed, where people’s life chances would be limited if their unmodified genes were considered from birth to be inferior.

#### Subpoint B: Framing

#### Frame the debate using the precautionary principle – vote so the effects of your action are compatible with the permanence of an authentically humane life on Earth. We have an obligation to not risk the future of humanity.

Francois Ewald, Director of Reasarch and Strategy, Federation Francaise des Societes d'Assurances., 2000 “Risk in contemporary society”, Connecticut Insurance Law Journal, 6 Conn. Ins. L.J. 47, 1999/2000, Hein Online

The powers of modern man confer upon him an infinite responsibility. His nature is revealed in fear, a feeling that makes man aware of the power of his new capacities. On one hand temporality, within which is situated his action, dilates to encompass the whole history of humanity, past and future, but it must be acknowledged that his powers are such that they threaten the existence of life itself. Contemporary man is becoming aware of himself in the feeling of anguish before the possibilities of annihilation that he bears in himself: for the first time, he is discovering in himself the power to commit suicide as a species. Faced with this possibility, and in order to [\*71] overcome his anguish, modern man is on a quest to find the rules of a morality that will limit his powers: the ethics of responsibility. His enormous power needs holding. The ethics of responsibility contain the risk and uncertainty to the extent that modern man must take account in his actions, both their long term consequences and their possibility of sweeping along with them, at least in certain cases, the worst, the catastrophe. Instead of the categorical Kantian imperative, there should be substituted an imperative adapted to the new type of human action: "Act so that the effects of your action are compatible with the permanence of an authentically humane life on earth." 35 For while we have the right to risk our own lives, we do not have the right to risk that of humanity. This imperative is the basis of the precautionary principle: it invites us to measure each of our actions against the principle of the worst scenario. Morality becomes a sort of negative morality: it is not so much turned towards the positive quest for the best as towards the avoidance of the worst. The uncertainty of long term prognostics confers the nature of a wager on human action, which leads to questions such as: do I have the right to endanger the interests of others in my wager?

#### Future generations should be your urgent ethical priority—flip the script on the negative’s flawed decision calculus

Elizabeth Olson, professor in the Department of Geography at the University of North Carolina at Chapel Hill, August 2015 “Geography and ethics I: Waiting and urgency”, Progress in Human Geography 2015, Vol. 39(4)

Waiting and urgency are likely to be familiar experiences for the readers of this journal. We wait for green lights, phone calls, food, and test results. We teach our children socially appropriate ways to wait their turn. Daily we face urgent deadlines, urgent paperwork and urgent calls for our attention. Waiting and urgency can therefore feel banal and ubiquitous, and hardly of great ethical or moral consequence. Yet in the context of late liberalism and capitalism in crisis, geographers are drawing our attention to the ways that space and waiting come together to produce and maintain potentially abusive and harmful arrangements of power and inequality. Lines, lists, rooms and rosters dictate an order of being received, and in doing so they may also influence the dignity and safety of those who are required to wait for jobs, housing, asylum or security from intimate terrorism. Potentially unruly bodies are managed through increasingly sophisticated technologies that make some people wait longer, and in worse conditions, than others. How a person waits can also produce judgments about both her culture and her character. As it organizes the routines of our daily lives, waiting can serve – rightly or wrongly – as a measure of lawfulness or civility, and potentially as a justification for the removal or denial of rights. A worthy citizen waits appropriately or faces consequences. Martin Luther King wrote about this ethical dimension of waiting in relation to civil rights and the US military involvement in Vietnam, clarifying that a demand to wait can be immoral and therefore requires an apposite counterforce, what he called ‘the fierce urgency of now’ ([ [31](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib31)] , [ [32](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib32)] ).

In this report, I consider the work of urgency and waiting as often unacknowledged ethical concepts. Both the conditions and the significance of waiting have shifted in response to the development of liberalized economies, global expertise and the institutionalization of chronological time ([ [7](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib7)] ; [ [28](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib28)] , [ [29](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib29)] ). Within these conditions, things look increasingly urgent for humans and non-humans who are surplus to this system. Indeed, we have only to look towards ever more precise language developed to describe the extreme urgency of human conditions. [ [1](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib1)] bare life, [ [52](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib52)] expulsions and [ [73](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib73)] abandonment and endurance are but a few examples of the intertwining of waiting and suffering as an expected consequence of late modernity, often in the form of the tortured, excluded, or indefinitely and obscurely detained body.

As with other deliberate engagements with geography and ethics, this report focuses on ‘the things that matter to geographers’ ([ [11](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib11)] ; see also [ [10](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib10)] ; [ [46](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib46)] , [ [47](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib47)] ; [ [60](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib60)] ; [ [64](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib64)] ). Geographic engagement with normative ethics also matters, because our attentiveness to space has the potential to improve normative reasoning beyond our well-developed problematization of distance (e.g. [ [61](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib61)] ; [ [33](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib33)] ). Interrogating ‘thick’ ethical concepts, such as suffering or justice (e.g. [ [42](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib42)] ; [ [43](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib43)] ), is one method for exposing the otherwise hidden spatial dimensions of ethical reasoning.1 [ [1](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib1)] I begin with a necessarily selective introduction to urgency and its role in moral reasoning and ethics before turning to the somewhat unlikely bedfellows of toileting and emergency, and conclude by drawing urgency back into dialogue with waiting.

Miriam-Webster defines ‘urgent’ as calling for immediate attention. When the word is turned from an adjective into a noun – urgency – its relationship with power is more evident: ‘Insistence; a force or impulse that impels or constrains’.2 [ [2](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib2)] Urgency is thus temporal, pushing for resolution in the immediate present or very near future, and it is also authoritative, demanding attention, compelling action or preventing us from acting. From this definition alone, urgency would appear to fill an important role in moral reasoning by distinguishing those things that cannot wait and must or must not happen, depending upon the force implied in any given demand. Utilitarian approaches like the practical ethics of [ [74](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib74)] presume scarce resources (money, attention, ingenuity, respect, relationships) to be allocated according to various considerations, including but not limited to the urgency of the claim. In the mathematical representations of epistemic utility arguments, urgency can even be ‘scored’ according to the possibility of its accuracy ([ [34](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib34)] ). From this utilitarian perspective, urgency is one consideration in moral reasoning, but it is not ethical in its own right, nor is it a virtue that might form a basis for ethics, as might be done with hospitality (e.g. [ [9](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib9)] ).

If the relationship between urgency and ethics was limited to a utilitarian ranking in moral reasoning, my analysis could turn to the challenging (and probably very interesting) task of surveying how geographers implicitly evoke a sense of urgency for the purpose of asserting hierarchies of concern. However, other trajectories within moral philosophy problematize the role of urgency as one amongst many variables that might factor in our moral reasoning. Scanlon and Wren incorporated urgency into non-utilitarian ethics in the 1970s, and their different approaches underscore some early alternatives within philosophy.3 [ [3](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib3)][ [53](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib53)] : 658) rejects utilitarian weighting of cost and benefit in favor of wellbeing criteria ‘independent of that person’s tastes and interests’. He identifies the main task of moral reasoning as resolving ‘equally strong preferences’ ([ [53](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib53)] : 660), some of which might be based on what he considers subjective needs related to satisfaction and taste (e.g. I need another car), and others on objective needs or basic needs (e.g. I need clean water).4 [ [4](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib4)] The urgency of a particular need, according to Scanlon, suggests a hierarchy that can be useful in ethical reasoning. Yet he puzzles over the possibility that urgency ‘appears already to be a moral notion’ ([ [53](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib53)] : 668), more thickly ethical than other considerations. [ [67](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib67)] pushes this further, such that urgency signals the ‘overriding ought that is directed toward the ultimately serious end of interagential harmony’ ([ [67](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib67)] : 90). Accordingly, urgency identifies the ultimate moral choice, that which constrains and compels agency itself. In contrast to approaches that treat urgency as one of a suite of considerations in ethical reasoning, here urgency delimits human agency, such that by the time we choose to undertake any particular action on moral grounds, we assume it to be the only choice we have.

Though different in intent and project, both Scanlon and Wren suggest urgency is constitutive of ethics, precipitating the normative impulse from which justice or alleviation from suffering might emerge. Put another way, urgency is not just a variable, but actually produces the conditions for morality. Derrida illustrates this characteristic as a discursive and historical turn in his reflections on justice, writing that ‘justice, however unrepresentable it may be, does not wait. It is that which must not wait’ ([ [20](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib20)] : 967). He continues: a just decision is always required immediately, ‘right away.’ It cannot furnish itself with infinite information and the unlimited knowledge of conditions, rules or hypothetical imperatives that could justify it. And even if it did have all that at its disposal, even if it did give itself the time, all the time and all the necessary facts about the matter, the moment of decision, as such, always remains a finite moment of urgency and precipitation. (Derrida, 1990: 967, emphasis in original)

Despite this discursive relationship, Derrida does not reject a ‘classical emancipatory idea’ of justice ([ [20](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib20)] : 971), listing HIV-Aids, homelessness, and the death penalty as illustrations. These are urgencies that cannot wait, because justice is both anti-historical, interrupting that which came before, and a discursive construction that produces something – an idea, an action, a policy, a prisoner – from which the very ethics of justice emerges.

Divergent in their theoretical influences and aims, these theorizations of the ethical work of urgency point to its power and to its role in the construction of what we come to think of as ethical, moral, or just. Urgency can demand the curtailing of human agency and the disruption of history. However, the spatiality of urgency is only vaguely referenced in these works, at best inferred through references to the individual or collectivity, or through the acknowledgement that the urgency of justice emerges materially in places, bodies, and circumstances. In the next section, I therefore turn to geographical research on two interrelated extremes of scale, the body and the large-scale global event, in order to highlight a bias in the application of a thickly ethical concept of urgency in our time.

[III The body and the emergency](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#toc)

Though the body is often presumed to be the most basic unit where urgency might be detected, only some dictionaries link urgency and the body through a ‘medical’ reference to the compelling need to defecate or urinate.5 [ [5](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib5)] Focusing on the different meanings of urgency runs the risk of obscuring language categories, but pushing together the two definitions – urgency as the need to defecate and urinate, and urgency as overwhelming force – is useful here, because my aim is to illustrate that the ethical work of urgency has been hijacked by an hierarchical organization of scales of moral deliberation. Specifically, our research suggests that the urgent body is cast as subjective and impulsive, while larger scales, such as the region, state or society, emerge as the scale of a rational ethics. While these are not new arguments about states ([ [55](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib55)] ) and their institutions ([ [22](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib22)] ), geographic insights into toileting and securitizations suggest that technocratic practices both require and perpetuate an ethical distinction between the body and the large-scale future event, with the latter emerging as the only legitimate site of urgent claims and thus the dominant subject of moral reasoning.

In research related to contemporary global toileting, the defecating body’s status as a legitimate ethical concern is more likely to be acknowledged when threatening the sanitation aims of cities and states. This is perhaps most evident in large metropolitan areas where uneven access to toilets amplifies social inequalities and human suffering ([ [37](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib37)] ). [ [30](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib30)] examination of waste management in India and other countries in the Global South reveals that taboos around feces often justify inequality in two ways; first, by creating conditions of precarity through taboos in discussing personal sanitation and toilet practices, and second, by justifying social exclusion on the basis of inferior sanitation practices. The lack of access to sanitation infrastructure can also provide reasons for excluding informally settled populations from ambitiously modernizing cities. In cities like Kampala, Uganda, planners, development workers, and community organizers frame those who cannot use modern toilet facilities as threatening ([ [62](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib62)] ). [ [63](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib63)] ) describes a group of female migrants selling goods outside of a large, upscale mall in Kampala, and their strategies for balancing the lack of access to a toilet with the danger and humiliation of going in the area behind their street-side location. Their desperate pain, induced by waiting hours until they can finally return to a more private location, contrasts with complaints of city planners and NGO workers who point to moral lethargy in the informal settlements that puts the city at risk. The poor, illegal, marginalized body is not a reasonable scale of urgency, nor is it the product of a thoughtful weighing of circumstances; in the face of a morally rational prioritization of a future Kampala, these bodily urgencies literally have no place in the modern city.

Though toileting might be thought of as a special case of bodily urgency, geographic research suggests that the body is increasingly set at odds with larger scale ethical concerns, especially large-scale future events of forecasted suffering. Emergency planning is a particularly good example in which the large-scale threats of future suffering can distort moral reasoning. [ [72](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib72)] lightly develops this point in the context of the war on terror, where in the presence of fictitious and real ticking clocks and warning systems, the urgent body must be bypassed because there are bigger scales to worry about: What does this all-pervasive sense of urgency mean ethically? The pressure of events is so overbearing, the stakes are so high, that they necessitate a suspension of ordinary ethical concerns. After all, displaying moral qualms when the lives of millions are at stake plays into the hands of the enemy. (Žižek, 2006)

In the presence of large-scale future emergency, the urgency to secure the state, the citizenry, the economy, or the climate creates new scales and new temporal orders of response (see [ [3](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib3)] ; [ [8](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib8)] ; [ [17](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib17)] ; [ [40](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib40)] ), many of which treat the urgent body as impulsive and thus requiring management. [ [36](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib36)] analysis of three interconnected discourses of ‘climate security’ illustrates how bodily urgency in climate change is also recast as a menacing impulse that might require exclusion from moral reckoning. The logics of climate security, especially those related to national security, ‘can encourage perverse political responses that not only fail to respond effectively to climate change but may present victims of it as a threat’ ([ [36](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib36)] : 49). Bodies that are currently suffering cannot be urgent, because they are excluded from the potential collectivity that could be suffering everywhere in some future time. Similar bypassing of existing bodily urgency is echoed in writing about violent securitization, such as drone warfare ([ [58](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib58)] ), and also in intimate scales like the street and the school, especially in relation to race ([ [39](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib39)] ; [ [71](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib71)] ).

As large-scale urgent concerns are institutionalized, the urgent body is increasingly obscured through technical planning and coordination ([ [4](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib4)] ). The predominant characteristic of this institutionalization of large-scale emergency is a ‘built-in bias for action’ ([ [69](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib69)] : 212) that circumvents contingencies. The urgent body is at best an assumed eventuality, one that will likely require another state of waiting, such as triage (e.g. [ [26](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib26)] ). [ [2](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib2)] cautions that in much of the West, governmental need to provide evidence of laissez-faire governing on the one hand, and assurance of strength in facing a threatening future on the other, produces ‘just-in-case preparedness’ ([ [2](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib2)] : 151) of neoliberal risk management policies. In the US, ‘personal ingenuity’ is built into emergency response at the expense of the poor and vulnerable for whom ‘[t]he difference between abjection and bearable survival’ ([ [2](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib2)] : 153) will not be determined by emergency planning, but in the material infrastructure of the city.

In short, the urgencies of the body provide justifications for social exclusion of the most marginalized based on impulse and perceived threat, while large-scale future emergencies effectively absorb the deliberative power of urgency into the institutions of preparedness and risk avoidance. Žižek references [ [5](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib5)] analysis of the banality of evil to explain the current state of ethical reasoning under the war on terror, noting that people who perform morally reprehensible actions under the conditions of urgency assume a ‘tragic-ethic grandeur’ ([ [72](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib72)] ) by sacrificing their own morality for the good of the state. But his analysis fails to note that bodies are today so rarely legitimate sites for claiming urgency. In the context of the assumed priority of the large-scale future emergency, the urgent body becomes literally nonsense, a non sequitur within societies, states and worlds that will always be more urgent.

[IV Waiting and the denial of urgency](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#toc)

If the important ethical work of urgency has been to identify that which must not wait, then the capture of the power and persuasiveness of urgency by large-scale future emergencies has consequences for the kinds of normative arguments we can raise on behalf of urgent bodies. How, then, might waiting compare as a normative description and critique in our own urgent time? Waiting can be categorized according to its purpose or outcome (see [ [16](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib16)] ; [ [25](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib25)] ), but it also modifies the place of the individual in society and her importance. As [ [50](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib50)] : 834) writes, ‘waiting … produces hierarchies which segregate people and places into those which matter and those which do not’. The segregation of waiting might produce effects that counteract suffering, however, and [ [28](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib28)] : 957) explains that though the ‘politics of waiting’ can be repressive, it can also engender creative political engagement. In his research with educated unemployed Jat youth who spend days and years waiting for desired employment, Jeffery finds that ‘the temporal suffering and sense of ambivalence experienced by young men can generate cultural and political experiments that, in turn, have marked social and spatial effects’ ([ [29](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib29)] : 186). Though this is not the same as claiming normative neutrality for waiting, it does suggest that waiting is more ethically ambivalent and open than urgency.

In other contexts, however, our descriptions of waiting indicate a strong condemnation of its effects upon the subjects of study. Waiting can demobilize radical reform, depoliticizing ‘the insurrectionary possibilities of the present by delaying the revolutionary imperative to a future moment that is forever drifting towards infinity’ ([ [75](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib75)] : 407). [ [70](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib70)] analysis of the self-destructive activities of disrespected working-class youth in Istanbul suggests that this sense of infinite waiting can lead not only to depoliticization, but also to a disbelief in the possibility of a future self of any value. Waiting, like urgency, can undermine the possibility of self-care two-fold, first by making people wait for essential needs, and again by reinforcing that waiting is ‘[s]omething to be ashamed of because it may be noted or taken as evidence of indolence or low status, seen as a symptom of rejection or a signal to exclude’ ([ [12](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib12)] : 109). This is why [ [6](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib6)] suggests that waiting creates an ideal state subject, providing ‘temporal processes in and through which political subordination is produced’ ([ [6](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib6)] : loc. 90; see also [ [56](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib56)] ). Furthermore, Auyero notes, it is not only political subordination, but the subjective effect of waiting that secures domination, as citizens and non-citizens find themselves ‘waiting hopefully and then frustratedly for others to make decisions, and in effect surrendering to the authority of others’ ([ [6](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib6)] : loc. 123).

Waiting can therefore function as a potentially important spatial technology of the elite and powerful, mobilized not only for the purpose of governing individuals, but also to retain claims over moral urgency. But there is growing resistance to the capture of claims of urgency by the elite, and it is important to note that even in cases where the material conditions of containment are currently impenetrable, arguments based on human value are at the forefront of reclaiming urgency for the body. In detention centers, clandestine prisons, state borders and refugee camps, geographers point to ongoing struggles against the ethical impossibility of bodily urgency and a rejection of states of waiting (see [ [15](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib15)] ; [ [18](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib18)] , [ [19](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib19)] ; [ [23](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib23)] ; [ [41](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib41)] ; [ [54](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib54)] ). [ [49](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib49)] analysis of a Delhi resettlement colony and [ [59](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib59)] discussion of the enclave between India and Bangladesh describe people who refuse to give up their own status as legitimately urgent, even in the context of larger scale politics. Similarly, [ [65](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib65)] account of desperate female detainees stripping off their clothes to expose their humanness and suffering in the Yarl’s Wood Immigration Removal Centre in the UK suggests that demands for recognition are not just about politics, but also about the acknowledgement of humanness and the irrevocable possibility of being that which cannot wait. The continued existence of places like Yarl’s Wood and similar institutions in the USA nonetheless points to the challenge of exposing the urgent body as a moral priority when it is so easily hidden from view, and also reminds us that our research can help to explain the relationships between normative dimensions and the political and social conditions of struggle.

In closing, geographic depictions of waiting do seem to evocatively describe otherwise obscured suffering (e.g. [ [13](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib13)] ), but it is striking how rarely these descriptions also use the language of urgency. Given the discussion above, what might be accomplished – and risked – by incorporating urgency more overtly and deliberately into our discussions of waiting, surplus and abandoned bodies? Urgency can clarify the implicit but understated ethical consequences and normativity associated with waiting, and encourage explicit discussion about harmful suffering. Waiting can be productive or unproductive for radical praxis, but urgency compels and requires response. Geographers could be instrumental in reclaiming the ethical work of urgency in ways that leave it open for critique, clarifying common spatial misunderstandings and representations. There is good reason to be thoughtful in this process, since moral outrage towards inhumanity can itself obscure differentiated experiences of being human, dividing up ‘those for whom we feel urgent unreasoned concern and those whose lives and deaths simply do not touch us, or do not appear as lives at all’ ([ [14](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib14)] : 50). But when the urgent body is rendered as only waiting, both materially and discursively, it is just as easily cast as impulsive, disgusting, animalistic (see also [ [38](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib38)] ). Feminist theory insists that the urgent body, whose encounters of violence are ‘usually framed as private, apolitical and mundane’ ([ [44](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib44)] : 8), are as deeply political, public, and exceptional as other forms of violence ([ [45](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib45)] ; [ [48](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib48)] ). Insisting that a suffering body, now, is that which cannot wait, has the ethical effect of drawing it into consideration alongside the political, public and exceptional scope of large-scale futures. It may help us insist on the body, both as a single unit and a plurality, as a legitimate scale of normative priority and social care.

[V Feeling urgent?](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#toc)

In this report, I have explored old and new reflections on the ethical work of urgency and waiting. Geographic research suggests a contemporary popular bias towards the urgency of large-scale futures, institutionalized in ways that further obscure and discredit the urgencies of the body. This bias also justifies the production of new waiting places in our material landscape, places like the detention center and the waiting room. In some cases, waiting is normatively neutral, even providing opportunities for alternative politics. In others, the technologies of waiting serve to manage potentially problematic bodies, leading to suspended suffering and even to extermination (e.g. [ [68](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib68)] ). One of my aims has been to suggest that moral reasoning is important both because it exposes normative biases against subjugated people, and because it potentially provides routes toward struggle where claims to urgency seem to foreclose the possibilities of alleviation of suffering. Saving the world still should require a debate about whose world is being saved, when, and at what cost – and this requires a debate about what really cannot wait. My next report will extend some of these concerns by reviewing how feelings of urgency, as well as hope, fear, and other emotions, have played a role in geography and ethical reasoning.

I conclude, however, by pulling together past and present. In 1972, Gilbert White asked why geographers were not engaging ‘the truly urgent questions’ ([ [66](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib66)] : 101) such as racial repression, decaying cities, economic inequality, and global environmental destruction. His question highlights just how much the discipline has changed, but it is also unnerving in its echoes of our contemporary problems. Since White’s writing, our moral reasoning has been stretched to consider the future body and the more-than-human, alongside the presently urgent body – topics and concerns that I have not taken up in this review but which will provide their own new possibilities for urgent concerns. My own hope presently is drawn from an acknowledgement that the temporal characteristics of contemporary capitalism can be interrupted in creative ways ([ [57](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib57)] ), with the possibility of squaring the urgent body with our large-scale future concerns. Temporal alternatives already exist in ongoing and emerging revolutions and the disruption of claims of cycles and circular political processes (e.g. [ [35](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib35)] ; [ [51](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib51)] ). Though calls for urgency will certainly be used to obscure evasion of responsibility (e.g. [ [24](https://web.b.ebscohost.com/ehost/detail/detail?vid=3&sid=4b9b8886-9688-4569-909e-9570aa500c00%40pdc-v-sessmgr01&bdata=JkF1dGhUeXBlPXNzbyZzaXRlPWVob3N0LWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#bib24)] : 56, fn 6), they may also serve as fertile ground for radical critique, a truly fierce urgency for now.

#### **Great power war is obsolete – cooperation is more likely than competition**

Deudney, Professor of Political Science at Johns Hopkins, and Ikenberry, Professor of Politics and International Affairs at Princeton University, 9

(Daniel, John, Jan/Feb, Foreign Affairs, “The Myth of the Autocratic Revival :Why Liberal Democracy Will Prevail,” proquest

This bleak outlook is based on an exaggeration of recent developments and ignores powerful countervailing factors and forces. Indeed, contrary to what the revivalists describe, **the most striking features of the** contemporary **international landscape are the intensification of economic** **globalization, thickening institutions, and shared problems of interdependence**. **The overall structure** of the international system today **is** quite **unlike that of the nineteenth century**. Compared to older orders, **the contemporary** liberal-centered **international order provides a set of** **constraints and opportunities-of pushes and pulls-that reduce the likelihood of severe conflict while creating strong imperatives for cooperative problem solving.** Those invoking the nineteenth century as a model for the twenty-first also fail to acknowledge the extent to which **war as a path to conflict resolution and great-power expansion has become largely obsolete**. Most important, **nuclear weapons have transformed great-power war** from a routine feature of international politics **into an exercise in national suicide**. **With all of the great powers possessing nuclear weapons** and ample means to rapidly expand their deterrent forces, **warfare among these states has truly become an option of last resort**. **The prospect** of such great losses **has instilled in the great powers a level of caution and restraint that effectively precludes major revisionist efforts**. Furthermore, **the diffusion of small arms** **and the** near **universality of nationalism have severely limited the ability of great powers to** conquer and **occupy territory** inhabited by resisting populations (as Algeria, Vietnam, Afghanistan, and now Iraq have demonstrated). Unlike during the days of empire building in the nineteenth century, **states today cannot translate great asymmetries of power into effective territorial control**; at most, they can hope for loose hegemonic relationships that require them to give something in return. Also unlike in the nineteenth century, today **the density of trade, investment, and production networks across international borders raises even more the costs of war.** **A Chinese invasion of Taiwan, to take one of the most plausible cases of a future interstate war, would pose for the Chinese communist regime daunting economic costs**, **both domestic and international.** Taken together, **these changes in the economy of violence mean that the international system is far more primed for peace** than the autocratic revivalists acknowledge.

#### Contention 2: Economic inequality

#### Human germline genetic engineering will make income inequality much worse.

Erik Sherman Senior Contributor Genetic Engineering Will Make Income Inequality Much Worse Aug 20, 2017, 08:06am EDT https://www.forbes.com/sites/eriksherman/2017/08/20/genetic-engineering-will-make-income-inequality-much-worse/?sh=2fdb4ed93d75

Early this month, scientists announced that they had edited genes in a human embryo to remove a disease-causing mutation. The work was astounding and the answer to prayers of many parents. Who wouldn't want a chance to prevent what would now be needless suffering by their children? But that wouldn't be the end of it. Many parents would want to ensure their children had the best of advantages through genetic improvement. Those with means could obtain them. With the ability comes ethical questions beyond the ultimate safety of such techniques. Expense of procedures will produce scarcity and aggravate income inequality that already continues to grow. Such improvements would certainly include physical characteristics because they can affect success. For example, taller people tend to be more financially successful in life, with one study showing that over a 30-year career, a six-foot tall person would make $166,000 more than someone five-foot five-inches. Almost all Fortune 500 CEOs are at least six-foot two-inches tall, even though that is true of only 3.9% of the population. Studies have shown that physical beauty translates into higher earnings than people who are less attractive by cultural norms. The gap is as large as those due to gender or racial factors. People wrongly assume that physical attractiveness has a strong correlation with competence and ability. Intelligence could also become an engineered trait in time. Intelligence is more than genetics, but what you inherit is an enormous part of what you can eventually develop. So, you could, in theory, make it easier for kids to whip through school, standardized tests, and the other hurdles that surround academic achievement. However, intelligence may not strongly correlate with lifetime income. (The question brings to mind an old Dilbert comic in which Dilbert asks a genius co-worker why he is also at the backward corporate employer. The genius questions whether intelligence is a Darwinian survival trait.) Genetic engineering of humans will happen as certainly as the atomic bomb would be developed once physics proved that such a device was possible in theory. Parents who can afford to already run children through enrichment programs and get them tutoring in how to take important standardized tests. What separates such kids from the majority is that their parents can afford these paths to a higher percentage of achievement. Genetic engineering will be no different, particularly in who benefits from it. Undoubtedly someone will make the claim that the technology will free everyone. That will not happen anymore than early automation and the replacement of human workers led to more leisure time to learn and be creative. Families far from the upper cast are unlikely to have the funds to indulge in such treatments. It will be the wealthiest who do, just as they already do. And be sure that some scientists and technicians who could perform such services will do so when enough money is offered. The result could become a Huxley-like dystopia with a class structure even more rigid than today. In Brave New World, is was the intentional reduction in mental and physical abilities that created the alpha, beta, gamma, delta, and epsilon categories of humans. We already countenance wide disparities in educational and cultural resources based on income, which makes it more difficult for people to move out of a lower economic background. Manipulating the innate abilities of those with the most would additionally extend the differentiation and the advantage.

#### Inequality causes warming and turns every other impact

Luke Kemp 2019, Researcher based at the Centre for the Study of Existential Risk (CSER) at the University of Cambridge, “Are we on the road to civilization collapse?” 02/19/19, http://www.st-stanislaus-gy.com/Academics/Topics/CollapseOfCivilization.pdf

Our deep past is marked by recurring failure. As part of my research at the Centre for the Study of Existential Risk at the University of Cambridge, I am attempting to find out why collapse occurs through a historical autopsy. What can the rise and fall of historic civilisations tell us about our own? What are the forces that precipitate or delay a collapse? And do we see similar patterns today? The first way to look at past civilisations is to compare their longevity. This can be difficult, because there is no strict definition of civilisation, nor an overarching database of their births and deaths. In the graphic below, I have compared the lifespan of various civilisations, which I define as a society with agriculture, multiple cities, military dominance in its geographical region and a continuous political structure. Given this definition, all empires are civilisations, but not all civilisations are empires. The data is drawn from two studies on the growth and decline of empires (for 3000-600BC and 600BC-600), and an informal, crowdsourced survey of ancient civilisations (which I have amended). Collapse can be defined as a rapid and enduring loss of population, identity and socioeconomic complexity. Public services crumble and disorder ensues as government loses control of its monopoly on violence. Virtually all past civilisations have faced this fate. Some recovered or transformed, such as the Chinese and Egyptian. Other collapses were permanent, as was the case of Easter Island. Sometimes the cities at the epicentre of collapse are revived, as was the case with Rome. In other cases, such as the Mayan ruins, they are left abandoned as a mausoleum for future tourists. What can this tell us about the future of global modern civilisation? Are the lessons of agrarian empires applicable to our post-18th Century period of industrial capitalism? I would argue that they are. Societies of the past and present are just complex systems composed of people and technology. The theory of “normal accidents” suggests that complex technological systems regularly give way to failure. So collapse may be a normal phenomenon for civilisations, regardless of their size and stage. We may be more technologically advanced now. But this gives little ground to believe that we are immune to the threats that undid our ancestors. Our newfound technological abilities even bring new, unprecedented challenges to the mix. And while our scale may now be global, collapse appears to happen to both sprawling empires and fledgling kingdoms alike. There is no reason to believe that greater size is armour against societal dissolution. Our tightly-coupled, globalised economic system is, if anything, more likely to make crisis spread. If the fate of previous civilisations can be a roadmap to our future, what does it say? One method is to examine the trends that preceded historic collapses and see how they are unfolding today. While there is no single accepted theory for why collapses happen, historians, anthropologists and others have proposed various explanations, including: CLIMATIC CHANGE: When climatic stability changes, the results can be disastrous, resulting in crop failure, starvation and desertification. The collapse of the Anasazi, the Tiwanaku civilisation, the Akkadians, the Mayan, the Roman Empire, and many others have all coincided with abrupt climatic changes, usually droughts. ENVIRONMENTAL DEGRADATION: Collapse can occur when societies overshoot the carrying capacity of their environment. This ecological collapse theory, which has been the subject of bestselling books, points to excessive deforestation, water pollution, soil degradation and the loss of biodiversity as precipitating causes. INEQUALITY AND OLIGARCHY: Wealth and political inequality can be central drivers of social disintegration, as can oligarchy and centralisation of power among leaders. This not only causes social distress, but handicaps a society’s ability to respond to ecological, social and economic problems. The field of cliodynamics models how factors such as equality and demography correlate with political violence. Statistical analysis of previous societies suggests that this happens in cycles. As population increases, the supply of labour outstrips demand, workers become cheap and society becomes top-heavy. This inequality undermines collective solidarity and political turbulence follows. COMPLEXITY: Collapse expert and historian Joseph Tainter has proposed that societies eventually collapse under the weight of their own accumulated complexity and bureaucracy. Societies are problem-solving collectives that grow in complexity in order to overcome new issues. However, the returns from complexity eventually reach a point of diminishing returns. After this point, collapse will eventually ensue. Another measure of increasing complexity is called Energy Return on Investment (EROI). This refers to the ratio between the amount of energy produced by a resource relative to the energy needed to obtain it. Like complexity, EROI appears to have a point of diminishing returns. In his book The Upside of Down, the political scientist Thomas Homer-Dixon observed that environmental degradation throughout the Roman Empire led to falling EROI from their staple energy source: crops of wheat and alfalfa. The empire fell alongside their EROI. Tainter also blames it as a chief culprit of collapse, including for the Mayan. EXTERNAL SHOCKS: In other words, the “four horsemen”: war, natural disasters, famine and plagues. The Aztec Empire, for example, was brought to an end by Spanish invaders. Most early agrarian states were fleeting due to deadly epidemics. The concentration of humans and cattle in walled settlements with poor hygiene made disease outbreaks unavoidable and catastrophic. Sometimes disasters combined, as was the case with the Spanish introducing salmonella to the Americas. RANDOMNESS/BAD LUCK: Statistical analysis on empiressuggests that collapse is random and independent of age. Evolutionary biologist and data scientist Indre Zliobaite and her colleagues have observed a similar pattern in the evolutionary record of species. A common explanation of this apparent randomness is the “Red Queen Effect”: if species are constantly fighting for survival in a changing environment with numerous competitors, extinction is a consistent possibility. Despite the abundance of books and articles, we don’t have a conclusive explanation as to why civilisations collapse. What we do know is this: the factors highlighted above can all contribute. Collapse is a tipping point phenomena, when compounding stressors overrun societal coping capacity. We can examine these indicators of danger to see if our chance of collapse is falling or rising. Here are four of those possible metrics, measured over the past few decades: Temperature is a clear metric for climate change, GDP is a proxy for complexity and the ecological footprint is an indicator for environmental degradation. Each of these has been trending steeply upwards. Inequality is more difficult to calculate. The typical measurement of the Gini Index suggests that inequality has decreased slightly globally (although it is increasing within countries). However, the Gini Index can be misleading as it only measures relative changes in income. In other words, if two individuals earning $1 and $100,000 both doubled their income, the Gini would show no change. But the gap between the two would have jumped from $99,999 to $198,000. Because of this, I have also depicted the income share of the global top 1%. The 1% have increased in their share of global income from approximately 16% in 1980 to over 20% today. Importantly, wealth inequality is even worse. The share of global wealth from the 1% has swelled from 25-30% in the 1980s to approximately 40% in 2016. The reality is likely to be starker as these numbers do not capture wealth and income siphoned into overseas tax havens. Studies suggest that the EROI for fossil fuels has been steadily decreasing over time as the easiest to reach and richest reserves are depleted. Unfortunately, most renewable replacements, such as solar, have a markedly lower EROI, largely due to their energy density and the rare earth metals and manufacturing required to produce them. This has led much of the literature to discuss the possibility of an “energy cliff” as EROI declines to a point where current societal levels of affluence can no longer be maintained. The energy cliff need not be terminal if renewable technologies continue to improve and energy efficiency measures are speedily implemented. Measures of resilience The somewhat reassuring news is that collapse metrics are not the entire picture. Societal resilience may be able to delay or prevent collapse. For example, globally “economic diversity” – a measurement of the diversity and sophistication of country exports – is greater today than it was in the 1960s and 1970s, as measured by the Economic Complexity Index (ECI). Nations are, on average, less reliant on single types of exports than they once were. For example, a nation that had diversified beyond only exporting agricultural products would be more likely to weather ecological degradation or the loss of trading partners. The ECI also measures the knowledge-intensity of exports. More skilled populations may have a greater capacity to respond to crises as they arise. Similarly, innovation – as measured by per capita patent applications– is also rising. In theory, a civilisation might be less vulnerable to collapse if new technologies can mitigate against pressures such as climate change. It’s also possible that “collapse” can happen without violent catastrophe. As Rachel Nuwer wrote on BBC Future in 2017, “in some cases, civilisations simply fade out of existence – becoming the stuff of history not with a bang but a whimper”. Still, when we look at all these collapse and resilience indicators as a whole, the message is clear that we should not be complacent. There are some reasons to be optimistic, thanks to our ability to innovate and diversify away from disaster. Yet the world is worsening in areas that have contributed to the collapse of previous societies. The climate is changing, the gap between the rich and poor is widening, the world is becoming increasingly complex, and our demands on the environment are outstripping planetary carrying capacity. The rungless ladder That's not all. Worryingly, the world is now deeply interconnected and interdependent. In the past, collapse was confined to regions – it was a temporary setback, and people often could easily return to agrarian or hunter-gatherer lifestyles. For many, it was even a welcome reprieve from the oppression of early states. Moreover, the weapons available during social disorder were rudimentary: swords, arrows and occasionally guns. Today, societal collapse is a more treacherous prospect. The weapons available to a state, and sometimes even groups, during a breakdown now range from biological agents to nuclear weapons. New instruments of violence, such as lethal autonomous weapons, may be available in the near future. People are increasingly specialised and disconnected from the production of food and basic goods. And a changing climate may irreparably damage our ability to return to simple farming practices. Think of civilisation as a poorly-built ladder. As you climb, each step that you used falls away. A fall from a height of just a few rungs is fine. Yet the higher you climb, the larger the fall. Eventually, once you reach a sufficient height, any drop from the ladder is fatal. With the proliferation of nuclear weapons, we may have already reached this point of civilisational “terminal velocity”. Any collapse – any fall from the ladder – risks being permanent. Nuclear war in itself could result in an existential risk: either the extinction of our species, or a permanent catapult back to the Stone Age. While we are becoming more economically powerful and resilient, our technological capabilities also present unprecedented threats that no civilisation has had to contend with. For example, the climatic changes we face are of a different nature to what undid the Maya or Anazasi. They are global, human-driven, quicker, and more severe.

#### Warming outweighs ---it causes extinction, is irreversible, and exacerbates every other impact

Torres 16 (Phil Torres; author, Affiliate Scholar @ Institute for Ethics and Emerging Technologies, founder of the X-Risks Institute, published articles for Bulletin of the Atomic Scientists, Salon, Journal of Future Studies, and the Journal of Evolution and Technology; 7-22-2016, "Op-ed: Climate Change Is the Most Urgent Existential Risk," FLI - Future of Life Institute, http://futureoflife.org/2016/07/22/climate-change-is-the-most-urgent-existential-risk/, accessed 8-9-2016)

For example, according to the Intergovernmental Panel on Climate Change, the effects of climate change will be “severe,” “pervasive,” and “irreversible.” Or, as [a 2016 study](http://www.climate.unibe.ch/~stocker/papers/clark16natcc.pdf) published in Nature and authored by over twenty scientists puts it, the consequences of climate change “will extend longer than the entire history of human civilization thus far.” Furthermore, [a recent article](http://advances.sciencemag.org/content/1/5/e1400253.full?con=&dom=pscau&src=syndication) in Science Advances confirms that humanity has already escorted the biosphere into the sixth mass extinction event in life’s 3.8 billion year history on Earth. Yet [another study](http://www.nature.com/nature/journal/v486/n7401/full/nature11018.html) suggests that we could be approaching a sudden, irreversible, catastrophic collapse of the global ecosystem. If this were to occur, it could result in “widespread social unrest, economic instability and loss of human life.” Given the potential for environmental degradation to elevate the likelihood of nuclear wars, nuclear terrorism, engineered pandemics, a superintelligence takeover, and perhaps even an [impact winter](https://en.wikipedia.org/wiki/Impact_winter), it ought to take precedence over all other risk concerns — at least in the near-term. Let’s make sure we get our priorities straight.

#### Tackling inequality is key to global cooperation

Charles Kupchan and Peter Trubowitz 2021 – Georgetown University international affairs professor and professor at London School of Economics “The Home Front: Why an Internationalist Foreign Policy Needs a Stronger Domestic Foundation,” Foreign Affairs, May/June 2021

The Home Front: Why an Internationalist Foreign Policy Needs a Stronger Domestic Foundation U.S. President Joe Biden has declared that under his leadership, “America is back” and once again “ready to lead the world.” Biden wants to return the country to its traditional role of catalyzing international cooperation and staunchly defending liberal values abroad. His challenge, however, is primarily one of politics, not policy. Despite Biden’s victory in last year’s presidential election, his internationalist vision faces a deeply skeptical American public. The political foundations of U.S. internationalism have collapsed. The domestic consensus that long supported U.S. engagement abroad has come apart in the face of mounting partisan discord and a deepening rift between urban and rural Americans. An inward turn has accompanied these growing divides. President Donald Trump’s unilateralism, neo-isolationism, protectionism, and nativism were anathema to most of the U.S. foreign policy establishment. But Trump’s approach to statecraft tapped into public misgivings about American overreach, contributing to his victory in 2016 and helping him win the backing of 74 million voters in 2020. An “America first” approach to the world sells well when many Americans experience economic insecurity and feel that they have been on the losing end of globalization. A recent survey by the Pew Research Center revealed that roughly half the U.S. public believes that the country should pay less attention to problems overseas and concentrate more on fixing problems at home. Redressing the hardships facing many working Americans is essential to inoculating the country against “America first” and Trump’s illiberal politics of grievance. That task begins with economic renewal. Restoring popular support for the country’s internationalist calling will entail sustained investment in pandemic recovery, health care, infrastructure, green technology and jobs, and other domestic programs. Those steps will require structural political reforms to ease gridlock and ensure that U.S. foreign policy serves the interests of working Americans. What Biden needs is an “inside out” approach that will link imperatives at home to objectives abroad. Much will depend on his willingness and ability to take bold action to rebuild broad popular support for internationalism from the ground up. Success would significantly reduce the chances that the president who follows Biden, even if he or she is a Republican, would return to Trump’s self-defeating foreign policy. Such future-proofing is critical to restoring international confidence in the United States. In light of the dysfunction and polarization plaguing U.S. politics, leaders and people around the world are justifiably questioning whether Biden represents a new normal or just a fleeting reprieve from “America first.”

#### Economic inequality spurs political gridlock- manifests every extinction scenario

Julian Cribb, 2017 -- Australian National University Emeritus Faculty Surviving The 21st Century: Humanity’s Ten Great Challenges and How We Can Overcome Them, Switzerland: Springer International, 2017, p. 166-167

The argument that income inequality leads to legislative stalemate and government indecision was advanced by Mian and colleagues in a study of the political outcomes of the 2008–2009 Global Economic Recession (Mian et al. 2012 ), stating “…politically countries become more polarized and fractionalized following financial crises. This results in legislative stalemate, making it less likely that crises lead to meaningful macroeconomic reforms.” It also affects intergenerational cohesion, explains Nobel economics laureate Joseph Stiglitz: “These three realities – social injustice on an unprecedented scale, massive inequities, and a loss of trust in elites – define our political moment, and rightly so…. But we won’t be able to fix the problem if we don’t recognize it. Our young do. They perceive the absence of intergenerational justice, and they are right to be angry” (Stiglitz 2016). From the perspective of the survival of civilization and the human species, financial inequality does not represent a direct threat—indeed most societies have long managed with varying degrees of income disparity. Where it is of concern to a human race, whose numbers and demands have already exceeded the finite boundaries of its shared planet, is in the capacity of inequality to wreck social cohesion and hence, to undermine the prospects for a collaborative effort by the whole of humanity to tackle the multiple existential threats we face. Rich-against-poor is a good way to divert the argument and so de-rail climate action, disarmament, planetary clean-up or food security, for instance. Disunity spells electoral loss in politics, rifts between commanders and their troops breed military defeat, lack of team spirit yields failure in sport, disharmony means a poor orchestra or business performance, family disagreements often lead to dysfunction and violence. These lessons are well-known and attested, from every walk of life. Yet humans persistently overlook the cost of socioeconomic disunity and grievances when it comes to dealing with our common perils as a species. For civilisation and our species to survive and prosper sustainably in the long run, common understandings and co-operation are essential, across all the gulfs that divide us—political, ethnic, religious and economic. A sustainable world, and a viable human species, will not be possible unless the poverty and inequity gaps can be reduced, if not closed. This is not a matter of politics or ideology, as many may argue: it is the same lesson in collective wisdom and collaboration which those earliest humans first learned on the African savannah a million and a half years ago: together we stand, divided we fall. It is purely an issue of co-existence and co-survival. Neither rich nor poor are advantaged by a state of civilisation in collapse. An unsustainable world will kill the affluent as surely as the deprived.

#### Contention 3: Solvency

#### A ban on human germline genetic engineering is the only option

Darnovsky, Lowthorp and Hasson, 2018 [Marcy Darnovsky](https://www.geneticsandsociety.org/user/25) is the executive director of the [Centre for Genetics and Society](https://www.geneticsandsociety.org/) (CGS). [•](https://www.openglobalrights.org/leah-lowthorp/) [Leah Lowthorp](https://www.geneticsandsociety.org/user/28) is a program manager at the [Centre for Genetics and Society](https://www.geneticsandsociety.org/) (CGS). [•](https://www.openglobalrights.org/katie-hasson/) [Katie Hasson](https://www.geneticsandsociety.org/contributor/katie-hasson) directs the Genetic Justice program at the [Centre for Genetics and Society](https://www.geneticsandsociety.org/) (CGS). Reproductive gene editing imperils universal human rights ORIGINALLY PUBLISHED: February 15, 2018 https://www.openglobalrights.org/reproductive-gene-editing-imperils-universal-human-rights/

This prospect should make recent attempts to back-pedal on the widespread and longstanding international opposition to human germline modification particularly worrying to human rights advocates. For example, a 2017 [report](https://www.nap.edu/catalog/24623/human-genome-editing-science-ethics-and-governance) by a committee of the US National Academies of Sciences and Medicine recommended that gene editing for human reproduction be permitted in certain circumstances, leaving open the possibility of expanding those circumstances in the future. But in the real world of commercial pressures and regulatory inadequacy, such limits would simply not hold. If the door to the use of human germline modification is cracked open, it will be impossible to limit its spread and applications. At this critical juncture, it’s important to remind ourselves why key human rights documents specifically prohibited these practices, long before they were technically feasible. The medical justifications for human germline modification fall short, and the temptation to “enhance” future generations is profoundly dangerous. Down that road, our scientific achievements would all too likely become not instruments of enlightenment and emancipation, but mechanisms for exacerbating inequality. And our desire to improve the human condition would lead us away from the realization of the human rights that we know are needed for individuals, societies, and humanity to thrive. The rapid pace of these developments creates an urgent need for the global community—perhaps gathering under UN auspices—to reaffirm existing agreements and clearly prohibit the dangerous and unethical use of reproductive gene-editing.

#### NATO will say yes, they support a ban and acknowledge the need to continue to improve awareness and response to emerging biological threats.

Ion Iftimie COVID-19: NATO in the Age of Pandemics NATO Defense College Research Paper No. 9 May 2020 https://www.ndc.nato.int/news/news.php?icode=1440

As part of its forward-looking reflection process, NATO would be well-advised to pay particular attention to the growing bioterrorist threat in the post-COVID-19 security environment. This implies to continue to improve NATO’s situational awareness of the bioterrorist threat, its capabilities to address it and its international engagements, in line with the 2012 Chicago Summit decisions. As seen above, NATO can complement national situational awareness through surveillance, intelligence-sharing and risk assessments that are vital for NATO biodefence. Initial dysfunctional and uncoordinated responses of the Allies to the COVID-19 pandemic highlighted, however, that much more can be done in the areas of cooperation, information sharing and identification of emerging biological threats.

#### We don’t even know how to safely edit human germlines, so we shouldn’t do it

WESLEY W. CHEN June 30 2019 HUMAN GERMLINE GENE EDITING: ENGINEERING AN UNSTOPPABLE TRAIN https://mylaw2.usc.edu/why/students/orgs/ilj/assets/docs/28-2-Chen.pdf

Regardless of the potential impact of gene editing on diversity or inequality, society is not yet equipped with the technology to safely edit human germlines. Since 2003 and the completion of Human Genome Project, we have fully mapped the DNA of human beings.132 However, the knowledge of a human’s nucleotide sequence is a far cry from knowing how genes interact within one another and affect the human physiology. If germline gene modification is likely to have significant medical benefits, is it nevertheless justified if there are still unknown chances that it could have other unintended, adverse consequences as well? Perhaps with some fatal diseases, such as Huntington’s Disease, where a single point mutation causes all symptoms, the benefits of the potential cure may outweigh the safety risks of germline gene editing. In fact, just this year, the U.S. National Academy of Science and the National Academy of Medicine released a report suggesting that such gene editing clinical trials “‘might be permitted, but only following much more research’ on the risks and benefits, and ‘only for compelling reasons and under strict oversight.’” 133 Although clinical germline gene editing may be technologically possible in the near future, the state of current gene editing technology does not yet justify the start of clinical applications. The potential benefits of germline gene editing notwithstanding, society has a responsibility to consider the best interests of the potential human life if gene editing still poses significant adverse risks. Currently, there are still too many issues with off-target gene editing (undesired typos in gene editing) and too many questions regarding what unforeseen consequences gene editing may have on future generations.134 Gene editing technology and our understanding of genetics will develop in time, but until we can definitively engineer an embryo without significant detrimental effects, there will remain significant questions surrounding medical applications of germline gene editing. Therefore, it is imperative that we support basic science research in human embryos if clinical gene editing treatments are ever to see the light of day.

#### There is no need for germline editing – current alternatives solve

Lander, et.al. 2019 Eric S. Lander , Françoise Baylis , Feng Zhang , Emmanuelle Charpentier , Paul Berg , Catherine Bourgain , Bärbel Friedrich , J. Keith Joung , Jinsong Li , David Liu , Luigi Naldini , Jing-Bao Nie , Renzong Qiu , Bettina Schoene-Seifert , Feng Shao , Sharon Terry , Wensheng Wei & Ernst-Ludwig Winnacker 13 March 2019 Adopt a moratorium on heritable genome editing https://www.nature.com/articles/d41586-019-00726-5

Some argue, especially in the popular press, that germline editing is urgently needed to stop children from being born with severe genetic diseases. But couples who know they are at risk of transmitting a severe disease-causing mutation already have safe ways to avoid doing so. They can use in vitro fertilization (IVF) in conjunction with preimplantation genetic testing (PGT), prenatal testing, sperm donors, egg donors, embryo donors or adoption. In particular, use of IVF followed by genetic screening of the embryos to ensure that only unaffected ones are transferred to the person’s uterus, guarantees that a couple will not have children with the genetic disease. The real problem is that most children with severe genetic diseases are born to couples who did not know they were at risk. Routine access to preconception genetic screening could allow most at-risk couples to make use of current options, should they wish to do so. Better access to newborn screening is also needed, to ensure that babies with a genetic disease can immediately receive any available therapy.

#### Plan is in accordance with congressionally mandated NDAA procedures to assess, compare and develop methods for dealing with threats of emerging biotechnology.

Kelley M. Sayler April 6, 2022 Emerging Military Technologies: Background and Issues for Congress Updated April 6, 2022 https://sgp.fas.org/crs/natsec/R46458.pdf

Congress has expressed an interest in conducting oversight of the military applications of emerging biotechnologies. For example, per Section 263 of the FY2020 NDAA (P.L. 116-92), DOD is to conduct “a review of the military understanding and relevancy of applications of emerging biotechnologies to national security requirements of the Department of Defense” and provide recommendations for future legislative and administrative activities.” 132 Section 278 of the FY2021 NDAA (P.L. 116-283) directs DOD to “conduct an assessment and direct comparison of capabilities in emerging biotechnologies for national security purposes ... between the capabilities of the United States and the capabilities of adversaries of the United States.” 133 Finally, Section 1091 of the FY2022 NDAA (P.L. 117-81) establishes the National Security Commission on Emerging Biotechnology, which is to “consider the methods, means, and investments necessary to advance and secure the development of biotechnology, biomanufacturing, and associated technologies by the United States to comprehensively address the national security and defense needs of the United States.” The commission is to deliver its interim findings and recommendations to the congressional defense committees and the President no later than January 26, 2023, and its final report no later than January 26, 2024.134

#### Scientists and experts agree on the need for a ban on human germline gene editing. The plan provides a governing framework that will drive dialogue on the issue and be the step to achieving global consensus.

Melanie Hess -2020 A Call for an International Governance Framework for Human Germline Gene Editing 95 Notre Dame Law Review 1369 https://scholarship.law.nd.edu/cgi/viewcontent.cgi?article=4899&context=ndlr

For a combination of all of these reasons, experts across fields with knowledge on the subject of gene editing, and particularly germline editing, are calling for caution. The aforementioned CRISPR pioneer Feng Zhang of the Broad Institute of Harvard and MIT, in supporting a moratorium, noted that before beginning experimentation, society needs to decide if human germline editing is even a good that should be pursued. If that is decided, he said, “we need to have guidelines first so that the people who do this work can proceed in a responsible way, with the right oversight and quality controls.”71 In reaction to Dr. He’s revelation at the 2018 summit, David Baltimore, chair of the Summit Organizing Committee, called the fact of the experiment “a failure of self-regulation by the scientific community.”72 Furthermore, following both the 2015 and 2018 summits, groups of scientists and experts put out calls for a moratorium on clinical applications of human germline editing until a “broad societal consensus” could be reached and an international governance framework established.73 While this consensus has not been reached and may in fact be far away,74 presumably there should be a governance framework ready to govern applications prior to this consensus to ensure that society and science proceed with caution, wisdom, and oversight. Furthermore, the development of principles and potential regulatory regimes may in fact help different arms of society come together in dialogue about the issue; in other words, resolving governance issues on the topic may be an important step in achieving this consensus.

## Advantage 1 – Extension

### autonomy & mosaicism

#### Its unethical because it risks mosaicism and off target effects

Melanie Hess -2020 A Call for an International Governance Framework for Human Germline Gene Editing 95 Notre Dame Law Review 1369 https://scholarship.law.nd.edu/cgi/viewcontent.cgi?article=4899&context=ndlr

Legal professor and bioethicist Katherine Drabiak describes the rhetoric around gene editing “intentionally misleading,” stating that the current state of technology is not as efficient as it is believed to be in terms of its potential benefits, and that, in fact, there is significant risk involved.47 The medical risks associated with germline gene editing include mosaicism, meaning some genes contain the intended modification and others do not. This can lead to serious health risks in later stages of development48 and other off target effects. Off-target effects “refer to a range of unintended outcomes” that can have serious health impacts on the child, including advanced aging or the development of tumors.49 Problematically, preimplantation genetic diagnosis (PGD), a process used to test the health of an embryo prior to implantation for pregnancy,50 often fails to accurately assess the effects of gene editing on an embryo. The inability to use PGD to test the health of an edited embryo would make it difficult to ascertain the germline editing procedure’s effectiveness prior to the embryo’s implantation. In other words, PGD cannot be used as a safeguard to indicate whether the editing has worked correctly prior to implantation.51 PGD can, however, be used to assess whether a defective gene is present in an unedited embryo, which is why Drabiak points to this as a better alternative to germline editing.52 Finally, there are a range of unpredictable effects that may emerge at any point in the future person’s life as a result of tampering with their initial germline cells. Drabiak notes that current research touting effectiveness incorrectly presumes that, following a gene editing procedure, “embryo survival equates to health.”53 In other words, a test subject embryo’s surviving the trial is not necessarily an indication of how the fetus will fare in the next nine months, or the years and decades following its birth. Some scholars believe that “germline modification will never be safe . . . because interactions between genes are highly integrated, designed to achieve stability and balance, and manipulation of one location risks disrupting the biological equilibrium.”54 Of course, this poses a serious obstacle to any research: with the current expert consensus on a moratorium on any applications that would result in a pregnancy,55 it is not possible to observe effects of germline editing on later stages of development of a child. Drabiak proposes that these risks are severe enough that they easily outweigh any benefits that germline gene editing could ever theoretically provide.56

#### Germline genetic engineering is proven to create a range of mutations – its not safe

Ledford 20 Ledford, Heidi. Heidi Ledford, Senior Reporter, London Heidi writes about biology and medicine, and has a PhD from the University of California, Berkeley. Heidi has written for The Oregonian, edited for the Berkeley Science Review, and freelanced for a few other publications. ““CRISPR Babies” Are Still Too Risky, Says Influential Panel.” Nature, 3 Sept. 2020, www.nature.com/articles/d41586-020-02538-4, 10.1038/d41586-020-02538-4. Accessed 28 June 2022. //DRE

Editing genes in human embryos could one day prevent some serious genetic disorders from being passed down from parents to their children — but, for now, the technique is too risky to be used in embryos destined for implantation, according to a high-profile international commission. And even when the technology is mature, its use should initially be permitted in only a narrow set of circumstances, the panel says. The recommendations, released in a report on 3 September, were produced by experts in ten countries convened by the US National Academy of Medicine, the US National Academy of Sciences and the UK Royal Society. The document joins a wealth of reports compiled in recent years that have argued against using gene editing in the clinic until researchers are able to address safety worries, and the public has had a chance to comment on ethical and societal concerns. “The technology is not presently ready for clinical application,” says Richard Lifton, president of the Rockefeller University in New York City and co-chair of the commission. The report — which reviewed the scientific and technical state of heritable gene editing, rather than ethical questions — advocates the formation of an international committee to evaluate developments in the technology and advise national advisory groups and regulators on its safety and utility. The commission was formed after Chinese biophysicist He Jiankui shocked the world in 2018 by announcing that he had edited human embryos that were then implanted, in an effort to make the resulting children resistant to HIV infection. The work, which was widely condemned by scientists and yielded prison sentences for He and two of his colleagues, led to the birth of two children with edited genomes. Unwanted changes Although genome-editing technologies such as CRISPR–Cas9 offer a fairly precise way to edit the genome, they have been shown to generate some unwanted changes to genes, and can produce a range of different outcomes even among cells in the same embryo. It could be years before researchers are able to iron out these difficulties, says Haoyi Wang, a developmental biologist at the Chinese Academy of Sciences’ Institute of Zoology in Beijing, and a commission member. In addition, Wang says, scientists need to develop better methods for thoroughly sequencing a human genome from single cells, so that an edited embryo can be screened in detail for unwanted genetic changes. The report also recommends that if, after thorough discussion with the public, individual nations decide that they are ready to move forwards with heritable genome editing, the practice should initially be limited to serious genetic disorders that are caused by DNA variants in a single gene. Even then, it should be used only when the alternatives for having a biologically related child that is unaffected by the genetic disorder are poor. “The report lays out very, very well just how rare it’s going to be that people actually need to access heritable human-genome editing,” says Jackie Leach Scully, a bioethicist at the University of New South Wales in Sydney, Australia. For example, in some cases people will instead be able to screen out embryos that carry a disease-causing genetic mutation. “We understand that not many couples would fall into these categories,” says Kay Davies, a geneticist at the University of Oxford, UK, and co-chair of the commission. “There would be a need for international cooperation in doing these first cases because there would be so few worldwide.”

#### Genetic mutations developing after germline operations can lead to cancer

Kaiser 16 Kaiser, Jocelyn. Jocelyn has been a staff writer for Science magazine since 1995. “The Gene Editor CRISPR Won’t Fully Fix Sick People Anytime Soon. Here’s Why.” Science.org, 3 May 2016, www.science.org/content/article/gene-editor-crispr-won-t-fully-fix-sick-people-anytime-soon-here-s-why?cookieSet=1. Accessed 29 June 2022.

And CRISPR still has big safety risks The most-discussed safety risk with CRISPR is that the Cas9 enzyme, which is supposed to slice a specific DNA sequence, will also make cuts in other parts of the genome that could result in mutations that raise cancer risk. Researchers are moving quickly to make CRISPR more specific. For example, in January, one lab described a tweak to Cas9 that dramatically reduces off-target effects. And in April in Nature, another team showed how to make the enzyme more efficient at swapping out single DNA bases. But immediate off-target cuts aren't the only worry. Although it's possible to deliver CRISPR's components into cells in a dish as proteins or RNA, so far researchers can usually only get it working in tissue inside the body by using a viral vector to deliver the DNA for Cas9 into cells. This means that even after Cas9 has made the desired cuts, cells will keep cranking it out. "The enzyme will still hang around over 10, 20 years," Zhang says. That raises the chances that even a very specific Cas9 will still make off-target cuts and that the body will mount an immune response to the enzyme. This may not truly be a problem, Zhang suggests. His team created a mouse strain that is born with the gene for Cas9 turned on all the time, so it expresses the enzyme in all cells for the animal's entire life. Even after interbreeding these mice for about 20 generations, the mice "seem to be fine" with no obvious abnormal health effects, Zhang says. All the same, "the most ideal case is, we want to shut off the enzyme." And that may mean finding nonviral methods for getting Cas9 into cells, such as ferrying the protein with lipids or nanoparticles—delivery methods that biologists have long struggled to make work in living animals. Other long-standing obstacles to gene therapy will confront efforts using CRISPR, too. Depending on the disease, any gene-edited cells may eventually die and patients could have to be treated multiple times. Researchers using gene transfer and editing approaches are also both hindered by limits on how much DNA a viral vector can carry. Right now CRISPR researchers often must use two different viruses to get CRISPR's components into cells, which is less efficient than a single vector.

#### There are numerous gaps in germline research and effectiveness – messing up can be catastrophic, creating generations of unintended consequence

Heggie 18 Heggie, Jon. Jon Heggie is a highly experienced writer with proven success across all media types, offering fast and accurate interpretations of briefs; flexible and perceptive adaptation of style and language; astute revision and editing of supplied copy; thorough research and understanding of subject matter and directly supporting clients, account handlers and creatives. Science, National Geographic, 17 Dec. 2018, [www.nationalgeographic.com/science/article/partner-content-genom-editing. Accessed 29 June 2022](http://www.nationalgeographic.com/science/article/partner-content-genom-editing.%20Accessed%2029%20June%202022). //DRE

Five arguments against germline genome editing Consent A crucial element of any clinical procedure is informed consent—ensuring that the patient fully understands the risks of a treatment. GGE is so new, complex, and uncertain that we cannot adequately inform prospective patients of the risks to them or future generations. This raises the deeper question of whether we have the right to deliberately, permanently, and irrevocably change the human genome without universal consensus. Uncertainty The human genome is an extremely complex ecosystem that we don’t fully understand, so we cannot absolutely predict the impact editing a gene will have. Sometimes multiple genes interact to perform a function, and it’s possible that a single edit could affect many other genes. Nor can we completely guarantee the accuracy of genome editing, so there is always the risk of making unintended changes with unforeseen consequences. Permanence If a change is made in a germline cell, we cannot reverse it. That change will inexorably pass from parent to child through the generations and will spread between families, communities, and countries to become part of humankind forever. As the entire effects of a genetic modification may not become apparent for years, decades, or even generations, permanently altering the human genome is too big a risk to take.

#### The domino of potential unethical side effects justifies a ban on germline editing.

Sarah Ruth Bates Rewriting Our Genes Is Easier Than Ever. That Doesn't Mean We Should Do It January 03, 2020 https://www.wbur.org/cognoscenti/2020/01/03/germline-prime-gene-editing-sarah-ruth-bates

That argument pushes us towards a risk we shouldn’t take. “Prime-Editing” is more precise than CRISPR, but that doesn’t make it “safe” for this purpose. If germline gene editing goes wrong, there’s no ethically sound way to stop the resulting domino effect. Gone wrong, germline gene editing has the potential to do widespread damage. Consider the recent [finding](https://www.businessinsider.in/science/news/every-person-alive-today-descended-from-a-woman-who-lived-in-modern-day-botswana-about-200000-years-ago-a-new-study-finds/articleshow/71795510.cms) that all living human beings descended from one woman who lived in the area we now call Botswana. Scientists have referred to this common ancestor as “Mitochondrial Eve.” Take her as an example — an extreme, but real, example — of the potential reach of one individual’s genes. Editing an embryo’s germline genes means that you’re altering the genetic code of that person, for life — and, if that individual has a baby, they may pass on those altered genes to that baby. If Nana or Lulu have children, they’ll pass on the germline edits Dr. He made — both the intended and the unintended. When they come of age, Nana and Lulu will have to have a version of the “where babies come from?” talk that no human being has ever before experienced, or should have to. The only way to prevent the future transmission of germline edits is to prevent the person whose genes have been edited from reproducing. Nana and Lulu couldn’t have possibly consented to that as a condition of the experiment, because they weren’t alive when the experiment was performed. Limiting their reproductive possibilities in that way would approach eugenics.

Its unethical – too much uncertainty – the complications might not surface for years.

Lanphier, et.al. 2015 Edward Lanphier, Fyodor Urnov, Sarah Ehlen Haecker, Michael Werner & Joanna Smolenski Published: 12 March 2015 Don’t edit the human germ line Nature volume 519, pages410–411 (2015)Ci https://www.nature.com/articles/519410a

The CRISPR technique has dramatically expanded research on genome editing. But we cannot imagine a situation in which its use in human embryos would offer a therapeutic benefit over existing and developing methods. It would be difficult to control exactly how many cells are modified. Increasing the dose of nuclease used would increase the likelihood that the mutated gene will be corrected, but also raise the risk of cuts being made elsewhere in the genome. In an embryo, a nuclease may not necessarily cut both copies of the target gene, or the cell may start dividing before the corrections are complete, resulting in a genetic mosaic. Studies using gene-editing in animals such as rats[5](https://www.nature.com/articles/519410a#ref-CR5), cattle[6](https://www.nature.com/articles/519410a#ref-CR6), sheep[7](https://www.nature.com/articles/519410a#ref-CR7) and pigs[8](https://www.nature.com/articles/519410a#ref-CR8), indicate that it is possible to delete or disable genes in an embryo — a simpler process than actually correcting DNA sequences — in onlysome of the cells. The current ability to perform quality controls on only a subset of cells means that the precise effects of genetic modification to an embryo may be impossible to know until after birth. Even then, potential problems may not surface for years. Established methods, such as standard prenatal genetic diagnostics or in vitro fertilization (IVF) with the genetic profiling of embryos before implantation, are much better options for parents who both carry the same mutation for a disease.

#### Germline editing puts multiple generations at risk and alters what it means to be human

[**Robert Sparrow**](https://pharmaceutical-journal.com/author/robert-sparrow) 24 September 2015 Genetically engineering humans: a step too far? https://pharmaceutical-journal.com/article/opinion/genetically-engineering-humans-a-step-too-far

Some scientists have been quick to tout the potential of this new technology as a possible “cure” for some forms of infertility and to prevent various genetic diseases affecting future individuals[[1]](https://pharmaceutical-journal.com/article/opinion/genetically-engineering-humans-a-step-too-far#fn_1). These hypothetical techniques would entail editing the genome of human embryos or of stem cells — a practice currently outlawed in the UK — that might then be coaxed into developing into sperm and eggs. What makes such hypothetical uses of genome editing especially controversial is that the genetic modification would — or at least could — affect the germline of the individuals who were brought into existence. Should something go wrong, multiple generations would be at risk. What germline modification could do that existing technologies cannot is produce embryos with particular genes associated with desirable traits[[1]](https://pharmaceutical-journal.com/article/opinion/genetically-engineering-humans-a-step-too-far#fn_1). If scientists can find genes that are associated with above-species-typical traits — for example, higher intelligence, longevity, concentration or memory — CRISPR/Cas9 will allow them to insert these genes into embryos. In theory, at least, the CRISPR/Cas9 system would allow parents to insert genes for as many desirable traits as they liked into the genome of their child. Let us not be deluded, then, that the renewed debate about germline genetic engineering, prompted by CRISPR/Cas9, is about rescuing a small number of individuals from the burden of genetic disease. It is nothing less than a debate about what it will mean to be human in the future. Will our grandchildren — or perhaps even children — be born all equally subject to the vicissitudes — and the joys — of the genetic lottery?[[3]](https://pharmaceutical-journal.com/article/opinion/genetically-engineering-humans-a-step-too-far#fn_5) Or will they be made? Stronger, better perhaps — children of the wealthy more so than others — but are created by designers and so are vulnerable to obsolescence[[4]](https://pharmaceutical-journal.com/article/opinion/genetically-engineering-humans-a-step-too-far#fn_6).

#### Germline editing violates autonomy and consent

(Aliya Jane, May 7th 2021, undergraduate student studying Physiological Science, OPINION: CRISPR Technology Violates Informed Consent, May Usher Era of Eugenics, Bruin Medical Review, <https://bruinmedicalreview.com/2021/05/07/opinion-crispr-technology-violates-informed-consent-may-usher-era-of-eugenics/#:~:text=CRISPR%20violates%20informed%20consent.,result%20of%20the%20edited%20germline>. Lbok)

Gene editing with CRISPR is used on two different cell types: somatic and germline. Germline cells are reproductive cells that eventually form embryos, sperm and oocytes. When targeting germline cells, effects can be felt for multiple generations due to their ability to pass on genetic information. Somatic cells refer to the rest of the body cells, excluding reproductive cells. Changes in somatic cells will not be passed down generationally. Using CRISPR to edit either type has ethical implications. Off-target mutations in both germline and somatic cells can result in negative health implications. Off-target mutations refer to nonspecific and unintended genetic modifications that can arise through the use of CRISPR. These could lead to very harmful effects on organisms, potentially even resulting in cell death. Germline editing also has a high risk factor because it can alter the genome of future generations. If there is some type of failure while editing the germline, undesirable mutations, side effects and other negative changes can also be inherited. This is especially risky because there is a lack of informed consent for offspring of future generations. Ethical Implications Informed consent is the process in which a health care provider educates a patient about the risks, benefits and alternatives of a given procedure or intervention. The patient, then, makes a voluntary decision about whether to undergo the procedure or intervention. **CRISPR violates informed consent***.* When it is used to edit the germline, the affected unborn fetus cannot give consent to take part in the experimental procedure or manage any complications or undesirable mutations that might arise as a result of the edited germline. Therefore CRISPR violates the fundamental tenet of medicine of providing informed consent.

### gene drive

#### Gene drive destroys gene diversity risking subsequent generations.

Scott J. Schweikart, Global Regulation of Germline Genome Editing: Ethical Considerations and Application of International Human Rights Law, 43 Loy. L.A. Int'l & Comp. L. Rev. 279 (2021). Available at: https://digitalcommons.lmu.edu/ilr/vol43/iss3/6

Germline genome editing (also sometimes referred to as heritable genome editing) refers “to all manipulations of germline cells,” which include primordial germ cells, gametes, zygotes and embryos.25 CRISPR technology can affect the germline of subsequent generations via a tool called a gene drive.26 A “gene drive actively copies a mutation made by CRISPR on one chromosome to its partner chromosome and thereby ensures that all offspring and subsequent generations will inherit the edited genome.”27 While discussion of gene drives often center around their use in insects (such as mosquitos), they can potentially be used in humans as well.

### human dignity

#### Jeopardizes fundamental human dignity

Roberto Andorno 2022 Human Dignity, Life Sciences Technologies and the Renewed Imperative to Preserve Human Freedom https://www.researchgate.net/profile/Roberto-Andorno/publication/360729946\_Human\_Dignity\_Life\_Sciences\_Technologies\_and\_the\_Renewed\_Imperative\_to\_Preserve\_Human\_Freedom/links/628cecf0d4e5243d9b9624f7/Human-Dignity-Life-Sciences-Technologies-and-the-Renewed-Imperative-to-Preserve-Human-Freedom.pdf

A central argument made in this chapter is that the pervasive technology developments that we have been witnessing over the past few decades create new potential threats to human dignity, and therefore resorting to dignity is inescapable to address the new challenges. The need to protect basic human interests in this technological context may require the expansion of existing rights, and maybe even the creation of new rights in order to effectively preserve full respect for intrinsic human dignity. In consonance with this view, Italian legal philosopher Norberto Bobbio argues that the need for a new generation of human rights “arise[s] from the danger posed to life, liberty and security by the growth in technological progress.” 30 As examples of such new rights, he mentions those relating to new threats to privacy and to our genetic integrity. He adds, It does not take much imagination to realize that development of technology, the transformation of social and economic conditions, widening knowledge and the intensification of the means of communication will produce such changes in the organization of human life and social relations as to engender favorable conditions for the creation of new needs and therefore demands for freedoms and powers.31 However, human rights alone are not always sufficient to respond to the emerging challenges posed by technology. Sometimes, a direct recourse to the foundational principle of human dignity seems necessary to stress the utmost importance of the issues at stake. This explains why the instruments relating to bioethics adopted since the 1990s place a much stronger emphasis on the notion of dignity than traditional human rights instruments and even give a broader meaning to this concept. Precisely in those years, and partly as a result of the announcement of the Human Genome Project made in 1990, the notion of human dignity started to be used beyond its classical meaning (i.e., the intrinsic value of every human individual) to articulate disquiet about biotechnological developments that may impact on future generations and on humankind as a whole. Human germline engineering can be regarded as intrinsically problematic as it jeopardizes basic features of the human condition and the common understanding of what it means to be human. It is therefore the dignity of future generations that is at stake here.32

#### Genetically edited humans have not consented to experimentation – harming their autonomy and human dignity

Krizia Rivera 2020 Genetic Engineering, Lack of Regulation in the United States of America and its Potentially Problematic Applications <https://scholarship.shu.edu/cgi/viewcontent.cgi?article=2092&context=student_scholarship>

Lulu and Nana are the first genetically modified human on earth. Lulu and Nana did not consent to this treatment. In fact, their entire genetic bloodline who will carry this edited gene in perpetuity has not consented. A grave dishonor has been perpetrated on the personal autonomy and human dignity of the twins and their future progeny. While scientists have predicted potentially harmful effects, 164 they cannot know the unknown. He violated the human rights of not only the twins but of humankind. He opened a door that we can never close. Until a global consensus is formed, the potential for human right violations through germline and somatic genetic engineering remains open.

#### Its unethical – destruction of what it fundamentally means to be human and risks too many being relegated to second class status

Melanie Hess -2020 A Call for an International Governance Framework for Human Germline Gene Editing 95 Notre Dame Law Review 1369 https://scholarship.law.nd.edu/cgi/viewcontent.cgi?article=4899&context=ndlr

The above passage primarily addresses the possibility that the use of germline editing for genetic enhancement would follow if germline editing were to become an acceptable procedure. In terms of acceptability, many distinguish between nontherapeutic genetic enhancement, or gene editing to engineer particular human traits like athleticism or intellect, and therapeutic gene editing, which addresses debilitating or life threatening genetic diseases.61 Marcy Darnovsky, head of the nonprofit Center for Genetics and Society, believes that “[u]nlike curing disease, genetic enhancement would be morally reprehensible.”62 The 1997 film Gattaca provides a cliche, but ´ apt, illustration of the potential societal problems of genetic enhancement and reflects society’s fears about eugenics and genetic interventions. In this dystopian not-too-distant future, parents have the option to conceive children through the genetic selection of the best traits of their parents, and the “in-valids”—individuals who were conceived without genetic intervention— occupy a second-class position in society.63 Despite laws against genetic discrimination, the Gattacan society found ways to relegate inferior employment and social positions to those individuals who were deemed genetically infer ior.64 Even the unrealized potential of such applications demonstrates the necessity of implementing proper regulation before germline editing gets off the ground so that it cannot be abused in these readily imaginable ways. These concerns are related to a commonly invoked principle of the “slippery slope,” in which concessions made to allow “acceptable” applications risk permitting unacceptable applications further down the road.65 There is also the ethical dilemma about the unnaturalness of germline editing and theologically based concerns that germline editing “amounts to playing God.”66 Although allegations of playing God are two a penny in debates about breakthrough technologies, with gene drives they do feel better-founded than usual. The ability to remove species by fiat—in effect, to get them to remove themselves—is, like the prospect of making new species from scratch, a power that goes beyond the past ambit of humankind.67 While the idea of causing extinction or making a species from scratch is referencing nonhuman applications of germline editing, the underlying principle—objecting to the tampering with species, including humankind— remains the same, if not possibly even more objectionable in substance. Even nonreligious persons have moral reservations related to this theory of “playing God” that takes the form of objection to the unnaturalness of the idea and how it constitutes a perceived assault on human dignity. A Pew Research study found that over twenty-five percent of nonreligious people opposed gene editing of a baby, even where doing so would improve that baby’s health, for the exact same reasons as did people who identified as religious—“because it would be meddling with nature and cross a line that should not be crossed.”68 Bioethicists have used the term the “yuck factor” to describe the intuitive aversion people feel when confronted with the idea of genetic engineering. “The Yuck Factor likely has its origins in Kantian and Christian philosophies of human dignity that permeate Western culture . . . [and] emphasize that human life has a higher moral place than the rest of the natural world.”69

#### Eugenics mindset undermines fundamental human dignity – and can solve without

Evolution News @DiscoveryCSC January 7, 2022, 1:31 PM Sound the Alarm on Germline Genetic Editing https://evolutionnews.org/2022/01/sound-the-alarm-on-germline-genetic-editing/

Smith argues the health benefits being pursued can be achieved without permanently altering the germlines, and he warns of a brave new world of eugenics pursued using CRISPR technology and germline editing. As he explains, it’s not just that germline editing could lead to unintended health consequences, or that such changes could work their way into the human population in the long term. It’s also that the eugenics mindset driving much of this experimental work threatens to undermine the foundational belief that all humans possess inherent dignity and worth, not just those humans who are genetically edited and enhanced.

### Eugenics/discrimination

#### Its eugenics – deliberately discriminatory and fundamentally unethical.

Theodore Friedmann, 7-4-2019, Professor at School of Medicine, University of California San Diego, "Genetic therapies, human genetic enhancement, and … eugenics?", Nature, https://www.nature.com/articles/s41434-019-0088-1, 6-25-2022, //ms

In the blazingly rapid period of only a few decades, these tools have already progressed from curiosities of somatic cell genetics in the laboratory to early-stage clinical application in individual human patients. Genome editing studies have reached this clinical stage for applications toward preventing and correcting genetic and even infectious diseases, including HIV AIDS [[1](https://www.nature.com/articles/s41434-019-0088-1#ref-CR1)], forms of leukemia [[2](https://www.nature.com/articles/s41434-019-0088-1#ref-CR2)], mucopolysaccharidoses I (<https://clinicaltrials.gov/ct2/show/NCT02702115>) and II (<https://clinicaltrials.gov/ct2/show/NCT03041324>), sickle cell disease [[3](https://www.nature.com/articles/s41434-019-0088-1#ref-CR3)], and others. Such genetic manipulation has been extended to genome editing studies in the human embryo identified to be at risk for a potentially dangerous or lethal disease. Proof of that concept has been provided for CRISPR-Cas9 genome editing correction in a preimplantation human embryo of a mutation responsible for the potentially lethal disease hypertrophic cardiomyopathy [[4](https://www.nature.com/articles/s41434-019-0088-1#ref-CR4)]. With unsettling speed, the door has now clearly been cracked even further open for human embryonic genetic modification by a recent announcement from China of purported HIV prevention in a subsequent generation by genome editing knockout of the CCR5 HIV co-receptor followed by birth of potentially HIV-resistant human infants [[5](https://www.nature.com/articles/s41434-019-0088-1#ref-CR5)]. As reported, the manipulation was widely regarded to be scientifically premature, technically flawed, and ethically indefensible, but the embryo genetic modification genie is probably already out of the bottle. The technical and ethical hazards of such applications have been discussed and will continue to be of major concern, even in the case of disease prevention and treatment. From therapy to genetic enhancement When aimed at aberrant functions causing disease, genetic manipulations such as “traditional” gene therapy and, more recently, genome editing, constitute legitimate therapy and are medically and ethically justifiable. But the potential applications for genetic modification do not stop with prevention and treatment of human disease. Gene-based therapies are one thing, but the intentional modification of the human genome to “improve” individuals, i.e., genetic enhancement, is quite another and beset with different sets of ethical and policy dilemmas. The rapidly developing tools of gene therapy and genome editing are potentially just as pertinent to understanding the mechanisms underlying human development and behavior, cognitive, and intellectual traits as to the formation and function of the human personality. It would probably require no great technical innovation to leap from disease prevention and therapy to attempts to modify and “enhance” human physical and intellectual traits. The temptation to do so is and will continue to be great. The tools of biotechnology, neuroscience, and genetics will increasingly identify many of the mechanisms underlying the development and regulation of human traits, not only of physical properties but also of cognitive, intellectual, and social traits, and make them tempting targets for genetic manipulation. What will be the consequences of modifying and genetically manipulating human functions intended to improve on the “natural”? When will merely “natural” not be good enough? From genetic enhancement to eugenics? Deliberate application of the concept and tools of genetic enhancement of individual human beings and of the human species flows directly into the highly troubling potential for spill-over into programs for design and preferential reproduction of “more desirable” and “better” kinds of human beings – i.e., eugenics. Are we prepared to pursue, accept, and regulate applications of genetic enhancement toward eugenic goals? Humanity has a very fraught relationship with the unsettling concept and the misguided practice of eugenics. The late nineteenth century and the beginning of the twentieth century witnessed the emergence and the flourishing of the concept of eugenics—the attempt to direct human heredity and evolution to ensure procreative advantage to more “desirable” human beings and to discourage or limit reproduction by the less desirables. Such programs relied on efforts to identify and provide advantage to the “favored” and to define methods to disadvantage the “unfavored”. Inspired by concepts born at the Genetics Record Office at Cold Spring Harbor, New York, criteria of social undesirability and social ills came to include the undesirable and purportedly genetic traits of poverty, criminality, mental disorders, laziness and homosexuality, and thalassophilia (love of the sea) among others [[6](https://www.nature.com/articles/s41434-019-0088-1#ref-CR6)]. There was obviously little or no truly rigorous scientific evidence of a genetic basis for these presumed genetic components. There were, instead, prejudiced and fact-free presumptions of the causes of social human ills based on imaginary pseudoscience meant to justify restricted immigration of “undesirable” populations to the US mainly from central Europe and Asia. Out of those misguided eugenic concepts emerged racist immigration policies and the disastrous US Supreme Court decision in Buck v. Bell that upheld the legality and ethical justification for implementing involuntary sterilization programs in the United States and other countries that were designed to prevent the birth of human beings identified, no matter how incorrectly, to be deficient and inferior [[6](https://www.nature.com/articles/s41434-019-0088-1#ref-CR6)]. This movement, particularly the one in the United States, was a major incubator of even harsher social programs and, in their extreme forms, to the genocidal programs of Nazi Germany. The eugenic landscape in the context of modern science However, the poor scientific bases for these early attempts at eugenics have given way to the proven scientific and manipulative strengths of modern human genetics that make genetic manipulation for the purposes of therapy, enhancement, and even possibly eugenic goals increasingly technically feasible. With time and with scientific advances made over the ensuing many decades, the inadequacy and the folly of such ethically and scientifically indefensible eugenic thinking of the early twentieth century became clear and rightly broadly rejected. Our understanding at that time of the possible long-term multi-generational and population effects of selective manipulations of mechanisms underlying human reproduction and evolution was seriously deficient. Even now, the possible deleterious long-term adverse genetic effects of non-therapeutic genetic enhancement and even “precision” targeted genome editing are not predictable or targeted exquisitely enough to justify their application in non-therapeutic experimental settings. We are justified, and possibly even compelled, by all current codes of ethical principles governing medical practice and biomedical research to use many of these new tools in the name of healing. But if we apply them for whimsical or even well-intentioned genetic enhancement purposes, we should be aware of our inadequate understanding of their potential for long-term and irretrievable harm, and of the likelihood that they can lead us down the path toward unwise eugenic goals. We should heed the warning attributed by some to the great American baseball player and folk philosopher Yogi Berra—“If you don’t know where you’re going, you’ll probably end up someplace else”. At the moment, we do not know where this path of human genetic enhancement and its potential extension to eugenic goals leads. If we wander in that direction, we may wind up in unexpected and societally detrimental and even disastrous places. We should be sure to tread down that road only if and when scientific, ethical, and public policy justifications are more evident than they are now.

#### Its discriminatory eugenics

WESLEY W. CHEN June 30 2019 HUMAN GERMLINE GENE EDITING: ENGINEERING AN UNSTOPPABLE TRAIN https://mylaw2.usc.edu/why/students/orgs/ilj/assets/docs/28-2-Chen.pdf

Eugenics is the idea of systematically applying genetic selection in humans.107 Negative eugenics teaches “breeding out” negative or unwanted characteristics (e.g. the Huntington’s Disease mutation); positive eugenics promotes desirable genetic traits (e.g. inheritable resistance to Malaria).108 While proponents for eugenics might argue that it would only be used as a positive tool for fixing some of society’s greatest problems (e.g. inheritable disorders), critics of eugenics would argue that the application of eugenics is not governed by such a bright-line rule. The controversy surrounding eugenics involves the ambiguity regarding what defines a negative or positive characteristic. There are some clear candidates for negative eugenics, such as a Tay-Sachs Disease—a fatal heritable disorder that results in severe mental retardation and death by the age of eight-years-old.109 But what about the genetic profile for Down Syndrome patients? Individuals with Down Syndrome experience mental retardation, but can live functional adult lives. Or what about the gene for lactose intolerance? When deciding what sort of genetic conditions deserve eugenic treatment, one must face the difficult, if not impossible task of making value judgments on each disorder.110 Depending on the subjective view for each person, what may be considered an unacceptable characteristic to one individual may be acceptable to another. Therefore, genetic conditions are less likely to fall neatly into rigid categories and more likely to rest in a spectrum ranging from clearly unacceptable disorders to controversial attributes. As one moves along the spectrum away from unanimously dreadful diseases, the room for disagreement increases. When such ambiguity exists, there is a greater risk that eugenics may be discriminatory. On one hand, eugenic champions might argue that it is unethical to deprive a mother an opportunity to use gene-editing technology to ensure a healthy child, and that society has a duty to produce healthier offspring.111 Negative eugenics could be limited to only clear and obvious cases (e.g., eliminating fatal genetic diseases); positive eugenics could enhance the human race through safe gene editing practices (e.g. increasing resistance to diseases). On the other hand, critics might argue that eugenics sits on a slippery slope and if we allow the possibility of “breeding out” negative characteristics, we will eventually find ourselves back in the 1940s alongside the atrocities of the Holocaust. Critics could also point out that even if society does not descend to such depths, the very concept of eugenics is discriminatory because it suggests that some lives are not worth living.112 If certain racial profiles become associated with diseases, eugenics risks stigmatizing such races.113 Furthermore, across and within different societies the economic availability of eugenic technology may greatly exacerbate inequality. For example, if the genes for high intelligence are identified and eugenic technology was only available at a high cost, already wealthy families would have a better opportunity to produce genetic “advantages” for their progeny. The ramifications of accelerating social, economic, and political stratification would be difficult to reverse.114 For such reasons, the risk of abuse has been deemed intolerable and eugenics has been mostly rejected in the past several decades.115 On the other hand, one can argue that there is a significant difference between preventing the birth of persons with certain genetic conditions and killing of persons bearing a specific trait. Especially considering the benefits that would come with eliminating unambiguously harmful genetic traits (e.g. Tay-Sachs disease116), the benefits of eugenics may outweigh the risks. Even if one was to accept that eugenics bears a substantial risk of propagating social inequality, is the risk enough to deny the benefits of eugenics to society? Benefits may come at a price. Regardless of where one stands on the eugenics debate, recent technological advances in gene editing have pumped new life into the eugenics debate. Whereas the historic versions of eugenics revolved around controlling reproductive partners—either by bringing persons together, keeping them apart, sterilization, or gamete selection (as with artificial insemination by donor)117—gene editing refines reproductive strategies by manipulating the very genetic material in any one individual.118

#### Germline genetic editing justifies eugenics in the guise of improving the health of our future children

Neal Baer 2020 Quals: Neal Baer is an award-winning showrunner, television writer/producer, physician, author, and a public health advocate and expert."Commentary: Code Dread?" Perspectives in Biology and Medicine 63, no. 1: 14-27. [doi:10.1353/pbm.2020.0001](http://doi.org/10.1353/pbm.2020.0001). /nfs

Doxzen and Halpern review a number of potential outcomes using GGE. They reflect on public access to medically necessary treatments and whether enhancements for one’s prospective children should ever be allowed, and they raise deep concerns about eugenics that can be conflated with our quest to improve our health and that of our future children. As national and international scientific bodies meet to develop guidelines and regulations for using GGE, Doxzen and Halpern argue that a human rights-based approach, rather than a utilitarian one, ought to “ensure that this socially disruptive technology minimizes further marginalization of people with disabilities and does not create a new form of social injustice.”

#### Unethical – intensifies genetic discrimination and social inequality – foundation of eugenics

Neal Baer 2020 Quals: Neal Baer is an award-winning showrunner, television writer/producer, physician, author, and a public health advocate and expert."Commentary: Code Dread?" Perspectives in Biology and Medicine 63, no. 1: 14-27. [doi:10.1353/pbm.2020.0001](http://doi.org/10.1353/pbm.2020.0001). /nfs

Many scientists contend that the driving question CRISPR poses is whether it fulfills an unmet medical need and can be made clinically safe. Garland-Thomson, along with many of our other contributors, cautions that we must look further to “what the existence of CRISPR technology suggests about the limits of being human.” Garland-Thomson worries that GGE approaches a “new eugenics.” Using germline editing to enhance or improve future persons, she says, may lead to “morally unacceptable consequences, ranging from producing medical harm to abrogating consent, intensifying genetic discrimination, increasing social inequality, promoting conditional parental acceptance, turning people into products, fostering a commercial medical industrial complex, and encouraging rogue scientific and medical practice.”

### Ableism

#### The ideology behind gene editing is ableist---people that are disabled reject the practice

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We agree that science should guide policy—except in cases where it wouldn’t assist people to live their lives but would, instead, exclude them. The CRISPR-Cas9 gene-editing technology, for which biochemists Jennifer Doudna and Emmanuelle Charpentier won the Nobel Prize in Chemistry, has the potential to do just that. So do other forms of scientific technologies. We should therefore always be aware of the ethical choices these technologies can pose. In the case of CRISPR, those choices are complex. CRISPR has many functions; one of these is that it can be used to treat disease. Yet the far-reaching, more fraught promise of this technology—one about which scientists seem at once excited and cautious—lies in its ability to eliminate from the gene pool what medical science identifies as faulty or abnormal genes that cause difference in individual people. Certainly, goes the logic of CRISPR’s promise, the goal of ridding future generations of terrible diseases that cause suffering and death and deplete resources, seems an unquestionable enterprise. But Doudna herself has recognized that CRISPR carries with it “great risk.” In a New York Times interview on October 22, 2020, she warned of the [unknown consequences of embryo editing](https://www.nytimes.com/2020/10/22/opinion/sway-kara-swisher-jennifer-doudna.html), cautioning researchers to wait to use CRISPR for these ends. As disability studies scholars and women with genetic differences who are experts in thinking about the consequences this technology will have for actual human beings, we have grave worries that the use of these “genetic scissors” will, in the future, cut people like us out of existence without others even noticing. Scientists who use CRISPR could see editing genes such as ours out of the gene pool as entirely uncontroversial. This attitude, in fact, would be consistent with wider societal views. The idea that ridding society of genetic differences that count as disease or defect is an undeniable “good” continues to be pervasive in our society. Americans generally see no problem with editing genes linked to broad swaths of people like us; after all, supporters of this view may argue, editing out a gene-linked condition is different from editing out a person, and curing disease is an indisputably good thing. But our genetic conditions are not simply entities that can be clipped away from us as if they were some kind of a misspelled word or an awkward sentence in a document. We are whole beings, with our genetic conditions forming a fundamental part of who we are. Still, many Americans—including medical providers and even some people with genetic differences—consider lives such as ours as [not worth living as they are](https://doi.org/10.3389/fpubh.2017.00117). Further, the common belief that ridding disease and anomaly from society is an incontrovertible good can lead very quickly from the actual possibilities of science to fantasies of “improving” humanity where we would all become some aspirational version of personhood that is somehow better, stronger, smarter, and healthier. But CRISPR’s tantalizing offer to achieve the supposedly “best” kind of people at the genetic level is an uneasy alert to those who are often judged to be biologically inferior—one we know all too well. People like us whose being is inseparable from our genetic condition would be the first to go. We both have genetic conditions that many people consider serious enough to eliminate from the human gene pool: one of us lives with cystic fibrosis (CF), and the other a form of syndactyly. Both of these conditions have shaped our bodies and our lives. Sandy’s affected lungs require several hours of treatments each day, and Rosemarie’s affected hands limit her manual dexterity. We are among the [one billion people in the world](https://www.un.org/development/desa/disabilities/resources/factsheet-on-persons-with-disabilities.html) (15 percent of the population) and [61 million people in the United States](https://www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html) (26 percent of all adults) who are considered disabled. We are among the 10 percent of all adults who have a genetic condition. Because we were born with our conditions, we have benefited from learning early on how to live with the characteristics of our particular genetic distinctiveness. Our supportive families saw to it that we accessed good health care and received educations suitable to our talents and interests. Improved medical treatments, social progress, and political equality movements raised our quality of life in ways that people like us in generations prior to ours could not have imagined. When Sandy was born in 1967, people with CF had an average [life expectancy of 15](https://doi.org/10.1164/rccm.200505-840OE), but during 1970–1990, life expectancy doubled due to new medical therapies. Today’s average life expectancy is 44, but with novel medicines called cystic fibrosis transmembrane conductance regulator (CFTR) modulators, people with [CF are expected to live even longer with fewer hospitalizations](https://doi.org/10.1016/j.prrv.2020.05.002). These transformations in life expectancy attest to the changing nature of prognosis, one for which CRISPR’s editing [cannot account](https://www.atsjournals.org/doi/full/10.1164/rccm.202004-0999LE). When Rosemarie was born, in the late 1940s, people with physical disabilities like hers were often [institutionalized and led limited lives](https://futureofchildren.princeton.edu/sites/futureofchildren/files/media/children_with_disabilities_22_01_fulljournal.pdf) far from the support of their families. At that time, only one in five children with disabilities were educated in public schools with nondisabled children. Physically disabled children were most often sent to segregated schools where they received inferior education. With the Education for All Act of 1975 (now the Individuals with Disabilities Education Act ([IDEA](https://www2.ed.gov/policy/speced/leg/idea/history.html)), however, the federal government guaranteed public education and services for all children with disabilities, thus changing their life trajectories. We learned to thrive with the bodies we have and possess identities and lives that include our genetic diagnostic categories but also go beyond them. Yet stubborn beliefs about “good” genes and “bad” genes nonetheless persist in discriminatory attitudes that affect us both. When Rosemarie was pregnant with her first child, the obstetrician assumed that her major concern was that the baby would have hands and arms like its mother, even though Rosemarie’s biggest concern was finding a good childcare situation that would complement her job responsibilities. When Sandy considered having a biological child, friends and medical providers questioned her decision to consider pregnancy because that meant passing on one copy of her cystic fibrosis gene to a future child. This imagined child would not have had the disease since her husband is not a carrier for CF (CF is an autosomal recessive disease). But some of those in Sandy’s circle still believed pregnancy inadvisable because, to them, producing a child who would carry the CF gene was equally undesirable. Sandy called out their assumption: that her condition was inherently inferior—a point they took as self-evident despite the fact that an estimated[24 percent of people worldwide are carriers for genetic conditions](https://pubmed.ncbi.nlm.nih.gov/22975760/). These stories also reveal an enduring ideology about the inextricable, cultural link among disability, reproduction, and suffering. They illustrate the subtle, yet insidious, idea that some genes are inherently bad and contaminate the human gene pool; as such, people who carry them should not propagate and pass those genes on to their progeny so as to make those children either carriers or affected. These ideas also expose an even deeper, ableist assumption: that people with supposedly “bad genes” fundamentally suffer and hold a less valuable place in society than others. This isn’t to say that people with genetic conditions don’t suffer, but we don’t necessarily suffer all the time and we don’t necessarily suffer any more than other people without such conditions. Yet the cultural impulse to assume that people with genetic variations are in a constant state of suffering, and that it blights our lives, is so pervasive that it is even internalized by some with genetic conditions themselves. Such genetic determinism is a new form of eugenic thinking grounded in what the communications studies scholar [James L. Cherney calls “common sense” ableism](https://dsq-sds.org/article/view/1665/1606), a belief system that allows people to simultaneously deny any commitment to distasteful eugenic principles while also holding them up. Common sense ableism permits, even encourages, such injurious attitudes. Utilizing genome manipulation tools and performing genetic selection is tantamount to engaging in what Rosemarie calls “velvet eugenics.” Enforced by laissez-faire commercialism, rather than by the state, velvet eugenics seems like common sense, yet it hides its violence and inequality behind claims of patient autonomy and under a veil of voluntary consent. Ultimately, market-driven velvet eugenics embodies a similar goal of purging unacceptable human variations that campaigns to eliminate the supposedly unfit and inferior have held in the past. Both enact a mandate to [exclude people with disabilities from coming into the world](https://www.theatlantic.com/magazine/archive/2020/12/the-last-children-of-down-syndrome/616928/). People like us shouldn’t be edited out of existence in some version of a utopian future. This vision of a future without people like us limits our ability to live in the present. Evaluating the quality of life of another person is a complex, highly subjective, and context-dependent task that is morally questionable in a society based on the concept that all people are of equal value regardless of their individual differences. The limitations of human imagination make it questionable, if not unethical, for a person to grasp another person’s (or group of people’s) quality of life fully. Expanding diversity in all its forms, including disability, strengthens the human community ethically and biologically because it opens the public and private sphere to a variety of perspectives, life experiences, ideas, and solutions to live together with mutual flourishing. More important, our shared founding belief in the equal value of all members of a society should remind us that people’s worth should not be determined by social judgments about their contribution. All members of a community contribute to its welfare by existing in their individual distinctiveness. Genome editing is a powerful, scientific technology that can reshape medical treatments and people’s lives, but it can also harmfully reduce human diversity and increase social inequality by editing out the kinds of people that medical science, and the society it has shaped, categorize as diseased or genetically contaminated--people like us who are understood as having bad genes. But we should be reminded that bad genes don’t necessarily lead to bad lives, just as good genes don’t necessarily lead to good lives. If CRISPR is put to use to eliminate rather than to treat genetic difference, we as a society would essentially instrumentalize this moralistic and reductionist assumption.

#### Genetic engineering undermines social acceptance solidarity toward disability

United Nations, 2-28-2020, "New eugenics: UN disability expert warns against ‘ableism’ in medical practice", OHCHR, https://www.ohchr.org/en/press-releases/2020/02/new-eugenics-un-disability-expert-warns-against-ableism-medical-practice, 6-25-2022, //ms

GENEVA (28 February 2020) – "Current developments in medical research and practice may revive eugenic ideas if safeguards for those affected are not ensured," today said the UN Special Rapporteur on the rights of persons with disabilities, Catalina Devandas, during the presentation of her [latest report](https://www.un.org/ga/search/view_doc.asp?symbol=A/HRC/43/41) to the UN Human Rights Council. The UN expert explained that developments in gene therapy, genetic engineering and prenatal screening experienced enormous growth, increasing our power to repair the body and prevent disease, but cautioned about "eliminating" human characteristics deemed undesirable. "People with disabilities are genuinely concerned that these developments could result in new eugenic practices and further undermine social acceptance and solidarity towards disability - and more broadly, towards human diversity," she said. In her report, Devandas also expressed her concerns on the impact of euthanasia and assisted suicide for persons with disabilities. "If assisted dying is made available for persons with health conditions or impairments, but who are not terminally ill, a social assumption could be made that it is better to be dead than to live with a disability," the expert warned. "People have the right to live and to die with dignity, but we cannot accept that people choose to end their lives because of social stigma, isolation or lack of access to personal assistance or disability-related services." Another major concern, Devandas stressed, is the absence of persons with disabilities in crucial debates on medical research and practice. "Without their experiences directly informing those debates, narratives suggesting that living with disabilities should be prevented become reinforced and socially validated." The Special Rapporteur explained that "ableism" is at the root of the problem. "If the life experiences of people with disabilities continue to be undervalued, no progress will be made." "What we need is a profound cultural transformation on the way society relates to the difference. That is a commitment to embrace disability as a positive aspect of human diversity. States must combat all forms of discrimination based on disability," the human rights expert concluded. Devandas also reported back to the Human Rights Council on her visits to [Kuwait](https://www.un.org/en/ga/search/view_doc.asp?symbol=A/HRC/43/41/Add.1), [Canada](https://www.un.org/en/ga/search/view_doc.asp?symbol=A/HRC/43/41/Add.2) and [Norway](https://www.un.org/en/ga/search/view_doc.asp?symbol=A/HRC/43/41/Add.3).

#### Human germline gene editing stigmatizes imperfection and drives toward eugenics

Carol Padden and Jacqueline Humphries, 2020, Carol Padden works at the Department of Communication, University of California, San Diego. Jacqueline Humphries works at Amyris, Inc., Emeryville, CA, “Who Goes First? Deaf People and CRISPR Germline Editing", Johns Hopkins University Press, https://muse-jhu-edu.eu1.proxy.openathens.net/article/748050, 6-27-2022, //ms

The surprise announcement in November 2018 that a Chinese researcher had implanted and brought to term two gene-edited embryos, resulting in the birth of twin girls, had the effect of galvanizing a debate that goes back decades (Begley 2018; Evans 2002; Kevles 1985). Should we make heritable changes in our children’s DNA? Until recently, this was hypothetical only, and the easy response was to say it is too uncertain and too unnecessary to be tolerated. Suddenly, however, the possibility that there might be real uses for mitochondrial DNA replacement or for germline editing has led to a more nuanced debate, ranging from calls to double-down on prohibiting this technology to discussions of how to permit it for a limited range of conditions, under strict oversight (Baltimore et al. 2015; NAS 2017; UNESCO 2015). Often lacking in this debate has been an effort to look back at debates surrounding earlier advances in reproductive technologies, most of which have been accompanied by fears of eugenics, the loss of human dignity, and the disruption of parent-child relationships. While these advances have each had pockets of abusive uses, they have been integrated into modern life without bringing about wholesale destruction of society. A true prohibition of germline editing already exists in a number of countries, by virtue of their signatures to an international instrument. A number of international efforts focus on human rights, including the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, the Convention on the Rights of the Child, the Convention for the Protection of Human Rights and Fundamental Freedoms, and the European Social Charter. But it is the 1997 Council of Europe’s Convention for the Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Medicine, better known as the Oviedo Convention, that was written specifically to address the intersection of human rights and biomedical developments, and aimed to protect the “dignity and identity of all human beings” (Council of Europe 1997). Article 13 reads: “An intervention seeking to modify the human genome may only be undertaken for preventive, diagnostic or therapeutic purposes and only if its aim is not to introduce any modification in the genome of any descendants” (emphasis added). In other words, even if done with the best of intentions, to ward off devastating—even lethal—conditions, the Convention admits of no alterations that are meant to affect descendants, though this position has not been without its critics (Council of Europe 2017; Cyngell, Douglas, and Savulescu 2017; De Wert et al. 2018; Hasson 2018). Debates around germline editing focus on multiple concerns. With regard to physical harm to individuals living in the future, this involves a risk-benefit analysis that is complicated by the multigenerational potential of the change (Baylis 2018; Rubeis and Steger 2018). This alone introduces questions about the stability and durability of the alteration, its effect under future (presumably different) environments, and the ever-increasing number of generations between the person affected and the person initially giving consent. A different objection goes directly to how we understand autonomy. As noted in the July 2018 report by the UK Nuffield Council, one might argue that “choosing someone else’s genetic endowment . . . offends against the essential dignity and nature of the person as a free and independent human being.” In essence, this argument is that germline editing interferes with a child’s “right to an open future” (Feinberg 1980, 1992). But one response has been not only that parents make many momentous decisions affecting their children’s lives, but that the acceptability of parental choices rests on whether they serve to expand or narrow a child’s prospects, and whether the changes were made for the welfare of the future child, such as preventing serious disease and disability (NAS 2017; Nuffield Council 2018). Of course, it should be noted that many in the deaf community and the community of little people would not define those conditions as disabilities, but rather as varieties of the human community. But this is the exception, and other groups with shared disabilities have not refused the designation, although they often argue the degree of impairment is as much a function of social and physical context as it is anything intrinsic to the body. Other concerns about germline editing revolve around fear that it will lead to intolerance of imperfection, turning children into commodities rather than the subjects of parental love, and that it will result in stigmatization of those who are disabled (Thiessen 2018).

#### Germline gene editing is discriminatory & ableist

Dr Calum Mackellar, 11-14-2017, "Why germline genome editing may be discriminatory • PET", PET, https://www.progress.org.uk/why-germline-genome-editing-may-be-discriminatory/, 6-27-2022, //ms

On the 20th anniversary of the 1997 European Convention on Human Rights and Biomedicine (Oviedo Convention), the Council of Europe Committee on Bioethics organised an international conference entitled 'Relevance and Challenges' last month in Strasbourg, France. At this meeting, delegates discussed the reasons behind Article 13 of this convention, which prohibits intentional [germline](https://www.bionews.org.uk/page_2520) procedures. Article 13 indicates that: 'An intervention seeking to modify the human genome may only be undertaken for preventive, [diagnostic](https://www.bionews.org.uk/page_2488) or therapeutic purposes and only if its aim is not to introduce any [modification](https://www.bionews.org.uk/page_2388) in the [genome](https://www.bionews.org.uk/page_2320) of any descendants.'(1) This means, according to paragraph 91 of the Explanatory Report to this convention, that: 'Interventions seeking to introduce any modification in the genome of any descendants are prohibited. Consequently, in particular genetic modifications of [spermatozoa](https://www.bionews.org.uk/page_2337) or [ova](https://www.bionews.org.uk/page_2309) for [fertilisation](https://www.bionews.org.uk/page_2313) are not allowed.'(2) During the event, there was repeated questioning of how the fundamental equality in worth of all human beings could be protected if Article 13 was deleted or amended. However, no clear answer was given. This was unfortunate because the selection of future human beings, based on their possible quality of life, is at the very core of germline procedures. For example, when a one-cell [embryo](https://www.bionews.org.uk/page_2310), or sperm and [egg](https://www.bionews.org.uk/page_2309) cells before they are used in conception, are edited, a new individual who would not otherwise have existed is being brought into being. Indeed, any change, no matter how small, to the variables in the creation of an individual results in a very different person coming into existence.(3) In other words, with most germline procedures one is not treating someone who exists, but making sure only certain persons, and not others, are brought into existence. This is the important non-identity dilemma which has not really been addressed, to any extent, by any of the wide-ranging reports studying the ethical consequences of [genome editing](https://www.bionews.org.uk/page_2517), such as the one prepared in 2017 by the US National Academies of Sciences and Medicine.(4) However, this dilemma needs to be addressed since making sure that only certain kinds of children are brought into existence, based on their possible quality of life, may also suggest that there is such a thing as a 'life unworthy of life' in society. Of course, it is possible to argue, as does the 2017 US Academies' report, that 'unconditional love for a disabled child once born and respect for all people who are born with or who develop disabilities are not incompatible with intervening to avert disease and disability prior to birth or conception'.(4) But that report does not explain how or why any deliberate selective discrimination can be seen as acceptable before birth or conception while suddenly becoming unacceptable when a person is present.(5) As the Dutch ethicist Hans Reinders at the Free University of Amsterdam argues: 'In any given case, the only reasonable answer to the question of why a disabled child should not be born is by reference to what one thinks about the lives of people living with the same disorder.'(6) This means that if parents decide not to have a child with a serious [genetic disorder](https://www.bionews.org.uk/page_2318) based solely on [genetic](https://www.bionews.org.uk/page_2316) reasons and not other factors, such as a lack of societal support for disability in a country, there is a very real sense that they are doing so because they would prefer one possible future child over another. In other words, this decision contradicts the important principle that the lives of all human beings have the same worth and value, regardless of their state of health.(7) It is also inevitable that the indirect message being given with such a view is that had one known, with hindsight, that someone was going to be affected by a certain kind of disability then one would have selected to create another individual. This, however, can clearly be considered discriminatory and would undermine the inherent equality in value of all persons in society. To be sure, a lot has already been written about this objection, called the 'expressivist argument'.(8) What is more, for some people, including a number of individuals affected by disability, this message may not be problematic. But for others, it may be seen as extremely offensive and discriminatory.(9) It is, moreover, no answer to simply state that these people are misguided or mistaken in being offended by such a message. More fundamentally, it is only possible to select between persons, including possible future persons, on purely genetic reasons if all ethical reasoning is reduced to consequentialist perspectives. But the Council of Europe does not do this. Instead, it recognises the equality of value and worth of every human life, regardless of whether it is short and difficult or long and pleasurable. This is one of the founding principles of the Council of Europe. Accordingly, if all persons, including all possible future persons, are considered to be fundamentally equal in value and worth, how can a choice between any of them ever be made? This also means that Article 13 cannot be amended or only a moratorium on germline procedures accepted, without undermining the radical equality between all human beings, which is the very basis of civilised society. The Council of Europe must, therefore, continue to uphold the Universal Declaration of Human Rights proclaimed by the General Assembly of the United Nations in 1948, which recognises in its preamble that 'the inherent dignity and...equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world'.

#### Germline engineering is the new frontier for reproductive and disability discrimination

Emily Galpern, 1-30-2020, Emily Galpern, MPH, is a consultant with more than 20 years’ experience coordinating policy coalitions and campaigns; facilitating groups of adults and young people; planning and leading trainings and conferences; and developing materials for educational and advocacy purposes. She has worked extensively with women, young people, immigrants, people of color, workers, LGBTQ people, and people with disabilities. Areas of expertise include the intersection of bioethics with reproductive health rights and justice; building bridges between social justice movements; as well as health disparities and inequities in public health and youth development. Clients and partners have included community-based organizations, movement-building organizations, universities, government agencies, policymakers, health systems, and unions. She received her BA in Women’s Studies from the University of California at Santa Cruz and her MPH from San Francisco State University. "Germline Modification Could Be New Frontier of Reproductive and Disability Oppression", Center for Genetics and Society, https://www.geneticsandsociety.org/biopolitical-times/germline-modification-could-be-new-frontier-reproductive-and-disability, 6-28-2022, //ms

This week, CGS and [Black Women for Wellness](https://www.bwwla.org/) released materials articulating a [reproductive justice](https://www.sistersong.net/reproductive-justice) perspective against human germline modification. The infographic and fact sheet situate the development of germline modification within the context of historical attempts to control the reproductive lives of women, trans, and nonbinary people. Most media accounts and scientific debates ignore the fact that germline modification would likely exacerbate reproductive, racial, and disability injustice. The reproductive justice movement is rooted in an understanding of how people’s lives are affected by the multiple contexts in which they live and the ways intersecting oppressions affect people’s reproductive lives. Thus, reproductive justice advocates are uniquely positioned to change the conversation about germline editing in mainstream media, public conversation, and policymaking. Change-making strategies identified in the new materials include: a call for political, economic, and social transformation rather than technological fixes; challenging the advance of a high-tech eugenic future in which some people’s genes are deemed more valuable than others’; and challenging ableist assumptions in discussions about the prospect of germline modification.

### Precautionary principle

#### Caring for the future of human kind is an overwhelming duty in a technological civilization.

Roberto Andorno 2022 Human Dignity, Life Sciences Technologies and the Renewed Imperative to Preserve Human Freedom https://www.researchgate.net/profile/Roberto-Andorno/publication/360729946\_Human\_Dignity\_Life\_Sciences\_Technologies\_and\_the\_Renewed\_Imperative\_to\_Preserve\_Human\_Freedom/links/628cecf0d4e5243d9b9624f7/Human-Dignity-Life-Sciences-Technologies-and-the-Renewed-Imperative-to-Preserve-Human-Freedom.pdf

The notion that we have duties towards future generations has been supported by several scholars, following very different approaches.36 However, few authors have explored this notion in such depth and more engagingly than Hans Jonas. In his influential Imperative of Responsibility, he proposed a new “categorical imperative” for our technological civilization that runs, “Act so that the effects of your action are compatible with the permanence of genuine human life: or expressed negatively: Act so that the effects of your action are nor destructive of the future possibility of such life.” 37 In other words, “caring for the future of humankind is the overruling duty of collective human action in the age of a technological civilization that has become ‘almighty,’ if not in its productive then at least in its destructive potential.” 38 This is why, according to Jonas, the present generation has a “metaphysical responsibility” of preserving nature and the human species.39

#### Precautionary principle is the best organizational method for decisionmaking

Nancy Myers, Science and Environmental Health Network, 2002 “The Precautionary Principle Puts Values First”, Bulletin of Science, Technology & Society, Vol. 22, No. 3, June 2002, 210-219, http://www.sehn.org/pdf/putvaluesfirst.pdf

Activists’ and advocates’ responses to the principle and their explanations of why it has become important and useful to them vary. Almost universally, however, they see it as an exercise in something beyond caution, or even precaution. It is not just a matter of buying up gas masks, so to speak, or reinforcing cockpit doors. They nearly always describe it instead in positive terms. Activists who have become discouraged by the Sisyphean task of trying to protect the Earth and the health of communities in the face of out-of-control technologies and damage often say that the precautionary principle gives them hope. They say it is something positive to work for and that it embodies common sense. Organizers and policy advocates alike express gratitude for a unifying idea that makes sense of everything they are trying to work for and that removes some important barriers to that work, at least in their own minds. Inevitably, values creep into these discussions. A typical range of responses came from a group of ecosystem scientists and advocates assembled by SEHN in May 2001 in Leavenworth, Washington, to discuss how the principle might apply to decisions related to ecosystems. After more than a day of discussion that went straight to the principle’s practical implications, the group was asked, Is the precautionary principle indeed of use to you? Some of their answers had an equally practical tone: By using precaution you articulate uncertainties that are already there. It is better to think out consequences. It is important science, but it is also an important public education tool. It helps people understand what to do with uncertainty. It is an organizing principle in theory—it takes our ideas and make sense of them—and in practice: it can galvanize a movement.

### No War

#### **Distrust their evidence - their authors have political motives to fearmonger**

Zenko & Cohen 12 (Micah Zenko, fellow at the Center for Preventative Action at the Council on Foreign Relations AND Michael Cohen, Fellow at the Century Foundation, March/April 2012, "Clear and Present Safety: The United States Is More Secure Than Washington Thinks," Foreign Affairs, Vol. 91(2))

**The disparity between foreign threats and domestic threat-mongering results from a confluence of factors**. The most obvious and important is electoral politics. **Hyping dangers serves** the interests of **both** political parties. For **Republicans**, who have long **benefit**ed **from attacking Democrats for their alleged weakness in the face of foreign threats**, there is little incentive to tone down the rhetoric; **the notion of a dangerous world plays to perhaps their greatest** political **advantage**. **For** **Democrats**, who are **fearful of being cast as feckless,** **acting** **and sounding tough is a shield against GOP attacks and an insurance policy in case a challenge to the U**nited **S**tates **materializes into a genuine threat**. **Warnings** about a dangerous world also **benefit powerful** bureaucratic interests. **The specter of looming dangers sustains and justifies the massive budgets of the** military and the intelligence agencies**, along with the** national security infrastructure **that exists** outside government **-- defense contractors, lobbying groups,** think tanks, and academic departments.

#### nuclear deterrence checks the impact of any disad

Tepperman 09 — Jonathan Tepperman, Deputy Editor of *Newsweek*, Member of the Council on Foreign Relations, now Managing Editor of *Foreign Affairs*, holds a B.A. in English Literature from Yale University, an M.A. in Jurisprudence from Oxford University, and an LL.M. in International Law from New York University, 2009 (“Why Obama Should Learn to Love the Bomb,” *The Daily Beast*, August 28th, Available Online at http://www.thedailybeast.com/newsweek/2009/08/28/why-obama-should-learn-to-love-the-bomb.print.html, Accessed 01-27-2012)

A growing and compelling body of research suggests that nuclear weapons may not, in fact, make the world more dangerous, as Obama and most people assume. The bomb may actually make us safer. In this era of rogue states and transnational terrorists, that idea sounds so obviously wrongheaded that few politicians or policymakers are willing to entertain it. But that's a mistake. Knowing the truth about nukes would have a profound impact on government policy. Obama's idealistic campaign, so out of character for a pragmatic administration, may be unlikely to get far (past presidents have tried and failed). But it's not even clear he should make the effort. There are more important measures the U.S. government can and should take to make the real world safer, and these mustn't be ignored in the name of a dreamy ideal (a nuke-free planet) that's both unrealistic and possibly undesirable. The argument that nuclear weapons can be agents of peace as well as destruction rests on two deceptively simple observations. First, nuclear weapons **have not been used since 1945**. Second, there's **never** been a nuclear, or even a nonnuclear, war between two states that possess them. Just stop for a second and think about that: it's hard to overstate how remarkable it is, especially given the singular viciousness of the 20th century. As Kenneth Waltz, the leading "nuclear optimist" and a professor emeritus of political science at UC Berkeley puts it, "We now have 64 years of experience since Hiroshima. It's striking and against all historical precedent that for that substantial period, there has not been any war among nuclear states." To understand why—and why the next 64 years are likely to play out the same way—you need to start by recognizing that all states are **rational** on some basic level. Their leaders may be stupid, petty, venal, even evil, but they tend to do things only when they're pretty sure they can get away with them. Take war: a country will start a fight only when it's almost certain it can get what it wants at an acceptable price. Not even Hitler or Saddam waged wars they didn't think they could win. The problem historically has been that leaders often make the wrong gamble and underestimate the other side—and millions of innocents pay the price. Nuclear weapons change all that by making the costs of war obvious, inevitable, and unacceptable. Suddenly, when both sides have the ability to turn the other to ashes with the push of a button—and everybody knows it—thebasicmath shifts. Even the craziest tin-pot dictator is **forced to accept that war with a nuclear state is unwinnable** and thus **not worth the effort**. As Waltz puts it, "Why fight if you can't win and might lose everything?" Why indeed? The ironlogic of **deterrence and m**utually **a**ssured **d**estruction is so compelling, it's led to what's known as the **nuclear peace**: the virtually unprecedented stretch since the end of World War II in which all the world's major powers have avoided coming to blows. They did fight proxy wars, ranging from Korea to Vietnam to Angola to Latin America. But these never matched the furious destruction of full-on, great-power war (World War II alone was responsible for some 50 million to 70 million deaths). And since the end of the Cold War, such bloodshed has declined precipitously. Meanwhile, the nuclear powers have scrupulously avoided direct combat, and there's very good reason to think they always will. There have been some near misses, but a close look at these cases is fundamentallyreassuring—because in each instance, very different leaders all came to the same safe conclusion. Take the mother of all nuclear standoffs: the Cuban missile crisis. For 13 days in October 1962, the United States and the Soviet Union each threatened the other with destruction. But both countries soon stepped back from the brink when they recognized that a war would have meant curtains for everyone. As important as the fact that they did is the reason why: Soviet leader Nikita Khrushchev's aide Fyodor Burlatsky said later on, "It is impossible to win a nuclear war, and both sides realized that, maybe for the first time." The record since then shows the same pattern repeating: nuclear-armed enemies slide toward war, then pull back, always for the same reasons. The best recent example is India and Pakistan, which fought three bloody wars after independence before acquiring their own nukes in 1998. Getting their hands on weapons of mass destruction didn't do anything to lessen their animosity. But it did dramatically mellow their behavior. Since acquiring atomic weapons, the two sides have never fought another war, despite severe provocations (like Pakistani-based terrorist attacks on India in 2001 and 2008). They have skirmished once. But during that flare-up, in Kashmir in 1999, both countries were careful to keep the fighting limited and to avoid threatening the other's vital interests. Sumit Ganguly, an Indiana University professor and coauthor of the forthcoming India, Pakistan, and the Bomb, has found that on both sides, officials' thinking was strikingly similar to that of the Russians and Americans in 1962. The prospect of war brought Delhi and Islamabad face to face with a nuclear holocaust, and leaders in each country did what they had to do to avoid it. Nuclear pessimists—and there are many—insist that even if this pattern has held in the past, it's crazy to rely on it in the future, for several reasons. The first is that today's nuclear wannabes are so completely unhinged, you'd be mad to trust them with a bomb. Take the sybaritic Kim Jong Il, who's never missed a chance to demonstrate his battiness, or Mahmoud Ahmadinejad, who has denied the Holocaust and promised the destruction of Israel, and who, according to some respected Middle East scholars, runs a messianic martyrdom cult that would welcome nuclear obliteration. These regimes are the ultimate rogues, the thinking goes—and there's no deterring rogues. But are Kim and Ahmadinejad really scarier and crazier than were Stalin and Mao? It might look that way from Seoul or Tel Aviv, but history says otherwise. Khrushchev, remember, threatened to "bury" the United States, and in 1957, Mao blithely declared that a nuclear war with America wouldn't be so bad because even "if half of mankind died … the whole world would become socialist." Pyongyang and Tehran support terrorism—but so did Moscow and Beijing. And as for seeming suicidal, Michael Desch of the University of Notre Dame points out that Stalin and Mao are the real record holders here: both were responsible for the deaths of some 20 million of their own citizens. Yet when push came to shove, their regimes **balked at nuclear suicide**, and **so would today's international bogeymen**. For all of Ahmadinejad's antics, his power is limited, and the clerical regime has always proved rational and pragmatic when its life is on the line. Revolutionary Iran has never started a war, has done deals with both Washington and Jerusalem, and sued for peace in its war with Iraq (which Saddam started) once it realized it couldn't win. North Korea, meanwhile, is a tiny, impoverished, family-run country with a history of being invaded; its overwhelming preoccupation is survival, and every time it becomes more belligerent it reverses itself a few months later (witness last week, when Pyongyang told Seoul and Washington it was ready to return to the bargaining table). These countries may be brutally oppressive, but nothing in their behavior suggests they have a death wish.

## Advantage 2 – Extension

### Link Ext – Economic inequality

#### Germline genetic engineering increases economic inequality

Scott J. Schweikart, Global Regulation of Germline Genome Editing: Ethical Considerations and Application of International Human Rights Law, 43 Loy. L.A. Int'l & Comp. L. Rev. 279 (2021). Available at: https://digitalcommons.lmu.edu/ilr/vol43/iss3/6

The ethical principle of justice is derived from concepts of what is fair and equitable.45 Issues of justice are of concern for both somatic and germline genome editing. Consider the example of germline genome editing that would confer a benefit (such as a modification to help confer immunity):46 if such an “enhancement is available only to the upper classes, it can further widen the already existing gap between the more advantaged and less advantaged members of society and thus exacerbate injustices.”47 Ethically, the “benefits of heritable genome editing should not preferentially accrue only to the affluent individuals.”48 Indeed, there is a human rights aspect with regard to social justice, as “[t]he potential for discrimination against genetic groups increases dramatically as genetic testing and [germline manipulation] techniques become less expensive, more reliable, and more widely available.”49 Maha Munayyer explains that “[germline manipulation] provoke[s] discrimination based on genetic status while simultaneously providing the means to alter that status.”50 An additional concern is that the price of the technology is yet another way that inequality may spread, as “editing is likely to be expensive” and “[g]enetic disease, once a universal common denominator, could instead become an artifact of class, geographic location, and culture.”

Germline gene editing further entrenches economic inequality

CBC Radio · Posted: Mar 23, 2021 4:56 PM ET | Last Updated: March 23, 2021 https://www.cbc.ca/radio/thecurrent/the-current-for-march-23-2021-1.5960200/gene-editing-could-make-social-inequalities-worse-if-misused-warns-author-1.5960568

The rich would be buying better genes for their children, which would be a nightmare,' says Walter Isaacson. An American author and professor says he believes gene editing will be the most consequential ethical issue humans face in the coming decades — and that it could become problematic if we start using the technology to edit out our diversity. "These [technologies] are going to be totally transformative," he told The Current's Matt Galloway. "Where it crosses a line is when we start not just editing for diseases in a living patient, but we try to make enhancements in children and in reproductive cells." Last October, American biochemist Jennifer Doudna and French microbiologist Emmanuelle Charpentier shared the Nobel Prize in Chemistry for developing the CRISPR gene editing tool. The technology allows scientists to edit specific genes to remove errors that lead to disease. CRISPR has been hailed by the scientific community as a revolutionary tool, and is currently being used to try treating cancer and other diseases, such as sickle cell anemia. But some experts have also warned against using it to solve all our social problems, saying not enough is known about the risks it poses or its long-term effects. In 2018, Chinese scientist He Jiankui claimed to have made the world's first gene-edited babies. The move drew widespread criticism, and He was later imprisoned in China for his research. Deploying gene editing technology in such a way also worries Isaacson. If we start using gene editing to enhance our children, we could end up entrenching the inequalities that already exist in society, he said. "The rich would be buying better genes for their children, which would be a nightmare," Isaacson said. "If every individual gets to say, alright, [I want my kid to be] tall or short, or muscular or not muscular, or any type of traits a human could have, I think that would be bad to do." What we should be open to is "medically necessary" gene editing that could prevent people from inheriting ailments such as Huntington's or sickle cell disease, he said. However, deciding what is actually medically necessary is "a blurry line." Isaacson cited famous creative minds like Miles Davis, Van Gogh and Hemingway, who lived with a disease or mental illness. Despite that, they produced incredible works of art. "We don't want our kids to suffer from psychological ailments," Isaacson said. "On the other hand, if we wipe our species clean," it could lead us to become a "very placid species without diversity, and perhaps without edge." Some people have already pushed back against the idea of using gene editing to prevent certain conditions. In 2019, Canadian bioethicist Françoise Baylis denounced a Russian molecular biologist's plan to edit human embryos to prevent deafness. Baylis told As It Happens at the time that it was unclear if the science to do so was safe, and that modifying genes could have unintended consequences. She added that many people in the deaf community also don't see deafness as a disability, but rather as diversity. These kinds of moral and ethical debates call for international consensus, said Isaacson. And experts are already trying to come up with answers. Doudna herself has been calling for international regulations to control the use of CRISPR, while others have raised alarm bells about making genetically altered babies. Isaacson hopes his own insights can help as well. "I wrote this book so we can start thinking about those questions," he said.

#### Germline engineering locks in inequalities and freezes social mobility

Sam **Pizzigati**, 8-2-**19** Sam Pizzigati spent two decades directing the publishing program at America’s largest union, the 2.8-million-member National Education Association, and before that edited the national publications of three other U.S. trade unions. “Can the Wealthy Hardwire Inequality into Our DNA?” <https://inequality.org/great-divide/can-inequality-be-hardwired-into-our-dna/> Accessed 6/30/22 T.T

But what if wealthy parents had the ability to give their kids that athletic talent? What if our nation’s rich could use emerging 21st-century “gene-enhancement technology” to make their kids physically bigger, stronger, or faster? What if they could even use that same technology to make their kids smarter? Would they? The answer the college admissions scandal makes plain: Many of the richest among us will stop at nothing to perpetuate their privilege. Spend a fortune to make their kids genetically superior? Of course they would. Should we be aghast at this prospect? Of course we should. What used to be pure science fiction — the ability to edit our DNA — has now become science reality. A generation ago our hippest young programming hotshots were working in computer code. Now the high-tech hip are busy working to reprogram our genes. Worried senior scientists, [notes](https://airmail.news/issues/2019-7-27/should-the-rich-be-allowed-to-buy-the-best-genes) historian Walter Isaacson, have begun talking “about the need for a moratorium on making edits that can be inherited.” They have plenty of reason to worry. In our deeply unequal world, grand private fortunes have much more of a capacity to shape how gene-enhancement technologies evolve than our scientists and ethicists. “Look at what parents are willing to do to get kids in college,” [observes](https://airmail.news/issues/2019-7-27/should-the-rich-be-allowed-to-buy-the-best-genes) MIT neuroscientist Feng Zhang. “Some people will surely pay for genetic enhancement.” Should these super rich, asks Erik Sontheimer, a University of Massachusetts expert in molecular medicine, simply “be allowed to buy the best genes they can afford?” The genetic pioneer Zhang certainly doesn’t think so. Think of what that would do, he urges, “to our species.” Think about our societies, too. A “free market” for genetic enhancement, suggests historian Isaacson, might well encode our world’s current inequities on a **permanent basis.**

#### The market will jack prices of genetic engineering creating inequal access

Alison **Irvine** is a science writer at Memorial Sloan Kettering Cancer Center. She has a special interest in the ethical implications of emerging biotechnologies, and has written about biodesign and bioethics for venues including Popular Science Magazine and The Center for Genomics & Society. Alison was an artist in the IGI’s 2019 CRISPR (un)commons residency program. December 16 **2019** https://www.statnews.com/2017/06/26/crispr-insurance-companies-pay/

The ruckus over the CRISPR gene-editing system hides a dark reality: its high cost may make it unaffordable and questions remain whether most insurance companies will pay for it. As CRISPR begins to move forward in clinical trials, there are some signals about how it may — or may not — be received commercially. Other types of gene therapies carry a price tag that is likely to induce sticker shock. If adopted, these therapies will add striking new cost burdens to our health care system. “The cost isn’t coming down,” said Mark Trusheim, director of the Massachusetts Institute of Technology’s NEW Drug Development Paradigms, a think tank working on the problem of how we will pay for expensive new drugs. “Companies will say, ‘We are developing these medicines, just pay us’; insurers will say, ‘We can’t afford it.'” A few years ago, Dutch drug company uniQure set up a plant in Lexington, Mass., to make a gene therapy called Glybera, at the time the most expensive drug in the world. It used viruses to slip copies of a gene into human cells to restore an enzyme needed to break down fats. The cost? $1.4 million per patient. The company eventually abandoned its bid to bring Glybera to the U.S. and, after having sold it just once in Germany, recently withdrew it from European markets, rendering it a commercial failure. Spark Therapeutics of Philadelphia is vying to bring the first gene therapy to market in the U.S. to treat a rare genetic eye disease called Leber congenital amaurosis 2. Analysts said it could cost a half-million dollars per eye. Like Glybera, Spark’s treatment is a form of traditional gene therapy, which makes use of viruses to get bits of restorative code into our cells. CRISPR will allow us to alter our existing genes. But it often relies on using viruses to shuttle the molecular gene-editing systems into our cells, and can be as expensive as other gene therapies. Editas Medicine plans to use CRISPR-Cas9 to treat various diseases, including Leber congenital amaurosis. “Enthusiasm is great for interventions in the eye,” New York University bioethicist Arthur Caplan told me. “They permit trying one eye at a time and it is easy to tell if anything positive happens. Safety is much easier to ensure.” But in its annual report, Editas noted “significant uncertainty” on whether payers would cover the treatment. In fact, a handful of insurance companies (VantageBlue from Blue Cross Blue Shield of Rhode Island, Select Health, and VIVA Health) have issued policy documents that exclude gene therapy from coverage, a move that experts say establishes policy against paying for CRISPR-based therapeutics. The Institute for Clinical and Economic Review released a report in March stating there are 12 to 14 gene therapy candidates that are expected to be among the first for commercial approval. “With payer budgets already stretched, and reining in the costs high on the agenda, both public and private payers will likely balk at the cost of some of these gene-based treatments,” the American Journal of Managed Care wrote in a reflection on the report. “Europe has the lead in approved gene therapies, and the first such drug to be approved had a launch price of $1.4 million. Can the US health care system absorb the cumulative impact of such prices, considering that 10 percent of the population has a rare condition linked to a genetic defect?” Five major gene therapy companies went public last year, suggesting that investors are ready to bet on the commercial prospects. Editas signed a deal with Juno Therapeutics that could be worth up to $737 million. The companies would combine CRISPR with other tactics to trick the immune system’s T cells to fight cancer. Those tactics could include disabling genes in T cells that prevent cancer cells from shutting down a T cell response, and adding bits of genetic code to engineer new receptors into T cells to let them attach to abnormal proteins in cancer cells called neoantigens. Gene and cell therapies that run into the six figures and beyond are poised to heighten the cost of cancer treatments, which not everyone may be able to afford. In fact, oncologist Dr. Siddhartha Mukherjee, author of the bestselling “Emperor of All Maladies,” gave a speech this month at the annual American Society of Clinical Oncology meeting that warned about dividing the world “into the rich who can afford personalized cancer treatment and the poor who cannot.” Tania Bubela, a law and policy expert, and Chris McCabe, a health economist, both at the University of Alberta, will be holding a workshop in late June in Banff, Canada, to explore how to enable access to high-priced technologies. According to Bubela, gene-editing systems such as CRISPR-Cas9 promise to heighten the tension around health care policy. One idea for easing the tension is for regulators to permit drug makers to get reimbursed from insurers before their gene therapy gets FDA approval, while requiring drug makers to collect more data before charging full price — a kind of price control. “Companies will charge whatever the market will bear,” Bubela told me. “I’m not even sure that many of these gene therapies will work, and not all medicine is worth the price.” But if these technologies become broadly used, especially in altering T cells for cancer, payers won’t meet the demands of steep prices, and Bubela predicts that “the system implodes under its own weight.” I believe that part of the problem lies in financial dealings. The Broad Institute, for instance, holds patents to gene editing tools such as CRISPR-Cas9 and CRISPR-Cpf1 and has issued exclusive licenses to Editas to use these tools for medical purposes. It could issue more-affordable CRISPR licenses one gene at a time, say directly to Juno Therapeutics, which now accesses them through its multimillion dollar deals with Editas. But that would cut Editas investors out of the loop. Such deals tend to inflate drug prices, since venture and public investors in Editas demand a cut on each CRISPR application. As investors engage in layers of transactional deals along the top of the food chain, the costs of gene therapies go up while the financiers may shift blame for a lack of patient coverage to insurance companies. Dr. Stuart Orkin, a pediatric oncologist at Boston Children’s Center, and Dr. Philip Reilly, a partner at Third Rock Ventures, an Editas funder, coauthored a paper in Science magazine saying that sticker shock shouldn’t halt commercialization. It can cost $300,000 a year to treat a single hemophilia patient with existing standard treatments and $25,000 to treat a single sickle-cell patient. Given costs like those, one-time gene therapy treatments running into the six figures may be comparatively affordable if an insurer makes payments to a drug-maker over a decade that are tied to the drug’s continued performance. In fact, the idea of spreading payments over years as annuities originated with corporate-friendly FDA commissioner Scott Gottlieb in a 2014 paper he co-authored for the American Enterprise Institute. Other performance-based models are being tested. GlaxoSmithKline, for example, is trying to bring a $665,000 gene therapy to the U.S. to treat an immune system disorder. The company said it will tie the cost of the drug to its performance in patients — with a money-back guarantee. “The reality is it’s very tough, and it doesn’t come easy,” said Jonathan Appleby, a chief scientific officer for the company’s rare disease unit. Orkin and Reilly also like the idea of using U.S. government funds from the Orphan Drug Act, established in 1983, to pay gene therapy companies for their commercial products. Another idea for keeping gene therapy, including CRISPR-based therapies, affordable is that investors could ask insurance companies to buy in bulk. MIT’s Ernst Berndt, inspired in part by volume purchases of vaccines in Africa, has proposed “advanced market commitments” through which insurance groups commit to buying a bunch of expensive drugs. That model that could be applied to gene therapies, but the insurers may not go for it without a bit more give. In 2009, the Biologics Price Competition and Innovation Act created a pathway for approving generic biologics, also known as biosimilars. It may apply to CRISPR-based biosimilars, but generic gene-editing — and thus competition to drive down prices — is unlikely to appear for decades. Cathryn Donaldson, a spokesperson for American’s Health Insurance Plans, noted that a lack of generic forms of CRISPR means “drug makers may charge whatever they want for their branded medication. “ In 1968, Garrett Hardin argued in his now-classic essay, “The Tragedy of the Commons,” that a shared-resource system will tend to be depleted by self-interested individuals. He also argued against exponential growth — to which we could add today the growth of biotech valuation. Health care is a limited shared resource, and expensive new technologies could add pressures resulting in unequal access, especially to cancer therapies. Given the aggressive drive for money, and without new approaches in thinking, we are headed for disaster. One of two things will happen: either we will embrace a national health care system with broad access but that severely limits expensive new drugs, gene therapies, and CRISPR-based biologics; or these treatments will be available to only the wealthiest among us who can pay for them, a dystopian vision which is perverse but perhaps more realistic considering the pressures for a return on investment.

### Inequality Impacts

#### Inequality furthers global warming – prevents needed action

**UN** 3 September **2016** https://www.un.org/development/desa/dpad/publication/wess-policy-brief-the-nexus-between-climate-change-and-inequalities/

Climate change and inequality are two of the most important challenges currently faced by the international community. An extensive review of the evidence in the World Economic and Social Survey 2016: climate change resilience, an opportunity for reducing inequalities suggests that the impacts of climate change and structural inequalities are locked in a vicious cycle. Large inequalities in access to physical and financial assets; unequal access to quality health services, education and employment; and inequality with respect to voice and political representation aggravate the exposure and vulnerability of large population groups to climate hazards. Better understanding of the links between climate change impacts and inequalities will help to improve the design and implementation of policies able to simultaneously address climate change hazards and socioeconomic inequalities. Climate change and inequality: a vicious cycle The scheme in figure 1 presents the climate change-inequality vicious cycle. It shows that multidimensional inequalities lead to increased exposure and vulnerability of the disadvantaged groups to climate hazards. As a result, the disadvantaged groups suffer disproportionate loss of income and assets (physical, financial, human and social) when these hazards actually hit them. Consequently, inequality worsens, and the cycle perpetuates with greater force. Multiple sources of inequality exacerbate the risk to climate change The more detailed analysis presented in WESS 2016 shows that inequality (i) increases the exposure of the disadvantaged groups of society to climate hazards; (ii) increases their susceptibility to the damages caused by climate hazards, and (iii) decreases their ability to cope with and recover from the damages caused by climate hazards. Analysis also shows that various forms of economic, political and social inequalities play an important role in exacerbating the impact of climate change on people and communities. In addition to inequality with respect to income and wealth, inequality regarding gender, age, ethnicity, race, religion and geographical location play a role in determining the exposure, susceptibility and ability of various groups within the population to cope with and recover from climate hazards. Empirical evidence shows that exposure to the adverse effects of climate change is largely determined by the location where people choose or are forced to live. Both lack of income (a consequence of economic inequality) or lack of rights (a consequence of political inequality) may compel many disadvantaged people to live in locations prone to climate hazards, such as coastal low-lying areas, along river banks, or at the bottom of hills that experience mudslides. Of the people living in the same area—thus having similar exposure—the disadvantaged households generally prove to be more susceptible to damages caused by climate hazards. Again, both economic and non-economic inequalities play a role in this regard. For example, among the people living in flood-prone areas, those in houses made of flimsy material (because of their limited means) are more susceptible to damage caused by floods than those in sturdy houses. Occupation is another factor determining susceptibility. Lack of assets often forces disadvantaged people into hazardous occupations such as artisan fisheries and crop cultivation in flood-prone areas. As a consequence, they become more susceptible to damages caused by adverse effects of climate change. Age and gender also play an important role in determining susceptibility. For example, young children and the elderly suffer more from health damages caused by climate hazards. Similarly, women who have to fetch fuel and water for their households are more exposed and susceptible to climate hazards. Inequality also limits the access of disadvantaged groups to the private, communal, and public resources necessary to cope with and recover from the damages caused by climate hazards. For example, while higher income households may buy insurance that provides compensation for losses, people living in poverty cannot afford such insurance and thus have to absorb the entire loss, further undermining their asset position. Certain groups are often able to exercise control over common property, based on their social position vis-à-vis other marginalized groups. The existence of entrenched inequalities in the access to voice, power and political representation often leads to public policies that perpetuate large inequalities in access to public resources such as health, education and infrastructure. Policy implications of the climate change-inequality vicious cycle The reality of the climate change-inequality vicious cycle has significant policy implications. The international community is committed to mitigating both climate change and inequality. The Sustainable Development Goals (SDGs) provide a framework for the implementation of policies to address the underlying causes of poverty, vulnerability and the risk to climate change simultaneously. SDG 10 calls for the reduction of inequality and SDG 13 calls for actions towards climate change mitigation and strengthening adaptive capacity and resilience to climate hazards. Interlinkages between climate change and inequalities are well reflected in most of the SDGs in recognition of the fact that it will be much harder for countries to make substantive development progress in key areas (such as poverty eradication, food security, healthy lives, among many others) unless people and communities are resilient to the negative impacts of climate hazards. Achieving these goals is not easy, however. While the challenges posed by climate change gained prominence in more recent years, the challenge of reducing the many dimensions of inequality is long-standing. The persistence, and often widening, of multiple inequalities testifies to the difficulty involved in dealing with this problem. Inequalities of different types are interrelated. Structural inequalities—such as inequalities with respect to assets, income, voice and political participation—are the underlying source of many other forms of inequality. The criterion that may guide policymakers through this maze of interrelationships is feasibility, both political and economic. However, what is important to realize is that the space of feasible actions towards reduction of inequality has expanded, owing to the urgency of climate action—perhaps a silver lining in the otherwise dark cloud of climate change! Many adaptation and mitigation measures have become unavoidable. Policy actions, however, must be consistent to make sure efforts to build climate change resilience properly address the underlying cause of inequality. Otherwise, mitigation and adaptation measures may have unintended consequences on inequality. For example, in expanding insurance for people to better cope with and recover from climate hazards, care must be taken to include the disadvantaged groups. This will help them to build assets and raise income. Similarly, in designing a programme to promote salinity resistant crops (an adaptation effort), efforts must be made to cover small and low-income farmers, who so far might have been deprived of necessary agriculture extension services. This may help them raise output and thus increase their income and assets. Similarly, in expanding health services to help local populations better withstand the health consequences of climate hazards, efforts must be made to ensure that people usually excluded will also have access to quality public health services. This will help them to build human capital. In extreme cases, when population groups need to be relocated, efforts must be made to ensure land distribution that is more egalitarian in the new location than it was in the old. There are numerous examples of ways in which adaptation and mitigation measures create opportunities to reduce inequality. Addressing the root causes of inequalities enables adaptation and the building of resilience to climate hazards, but it requires a continuum of well-designed and integrated policies, including (i) immediate assistance in the wake of climate hazards and disaster risk reduction; (ii) support to facilitate adaptation to a changing climate, entailing, for example, introduction of new crop varieties and water management techniques; (iii) policies centred on ecosystem management and on income diversification; and (iv) sound development policies focused on reducing inequalities to achieve poverty eradication and social inclusion. These specific measures will be most effective in reducing climate change vulnerability when they are part of longer-term transformative strategies which embrace coherent policies across the economic, social and environmental dimensions of sustainable development. Awareness of the interrelations between climate change resilience and the structural determinants of inequality will help to identify opportunities to break the vicious cycle between climate change and inequality and turn it into a path of inclusive and climate resilient development.

#### Inequality-driven collapse escalates global hotspots, including reactor meltdowns. Its an existential threat.

Mathew Maavak April 2021, Author at Atlas Institute for International Affairs, external researcher (PLATBIDAFO) at the Kazimieras Simonavicius University in Vilnius, Lithuania, “Horizon 2030: Will Emerging Risks Unravel Our Global Systems?,” Salus Journal, Vol. 9, No. 1, pp 2-17

But what exactly is a global system? Our planet itself is an autonomous and self- sustaining mega-system, marked by periodic cycles and elemental vagaries. Human activities within however are not system isolates as our banking, utility, farming, healthcare and retail sectors etc. are increasingly entwined. Risks accrued in one system may cascade into an unforeseen crisis within and/or without (Choo, Smith & McCusker, 2007). Scholars call this phenomenon “emergence”; one where the behaviour of intersecting systems is determined by complex and largely invisible interactions at the substratum (Goldstein, 1999; Holland, 1998). The ongoing COVID-19 pandemic is a case in point. While experts remain divided over the source and morphology of the virus, the contagion has ramified into a global health crisis and supply chain nightmare. It is also tilting the geopolitical balance. China is the largest exporter of intermediate products, and had generated nearly 20% of global imports in 2015 alone (Cousin, 2020). The pharmaceutical sector is particularly vulnerable. Nearly “85% of medicines in the U.S. strategic national stockpile” sources components from China (Owens, 2020). An initial run on respiratory masks has now been eclipsed by rowdy queues at supermarkets and the bankruptcy of small businesses. The entire global population – save for major pockets such as Sweden, Belarus, Taiwan and Japan – have been subjected to cyclical lockdowns and quarantines. Never before in history have humans faced such a systemic, borderless calamity. COVID-19 represents a classic emergent crisis that necessitates real-time response and adaptivity in a real-time world, particularly since the global Just-in-Time (JIT) production and delivery system serves as both an enabler and vector for transboundary risks. From a systems thinking perspective, emerging risk management should therefore address a whole spectrum of activity across the economic, environmental, geopolitical, societal and technological (EEGST) taxonomy. Every emerging threat can be slotted into this taxonomy – a reason why it is used by the World Economic Forum (WEF) for its annual global risk exercises (Maavak, 2019a). As traditional forces of globalization unravel, security professionals should take cognizance of emerging threats through a systems thinking approach. Methodology An EEGST sectional breakdown was adopted to illustrate a sampling of extreme risks facing the world for the 2020-2030 decade. The transcendental quality of emerging risks, as outlined on Figure 1, below, was primarily informed by the following pillars of systems thinking (Rickards, 2020): Diminishing diversity (or increasing homogeneity) of actors in the global system (Boli & Thomas, 1997; Meyer, 2000; Young et al, 2006); Interconnections in the global system (Homer-Dixon et al, 2015; Lee & Preston, 2012); Interactions of actors, events and components in the global system (Buldyrev et al, 2010; Bashan et al, 2013; Homer-Dixon et al, 2015); and Adaptive qualities in particular systems (Bodin & Norberg, 2005; Scheffer et al, 2012) Since scholastic material on this topic remains somewhat inchoate, this paper buttresses many of its contentions through secondary (i.e. news/institutional) sources. Economy According to Professor Stanislaw Drozdz (2018) of the Polish Academy of Sciences, “a global financial crash of a previously unprecedented scale is highly probable” by the mid-2020s. This will lead to a trickle-down meltdown, impacting all areas of human activity. The economist John Mauldin (2018) similarly warns that the “2020s might be the worst decade in US history” and may lead to a Second Great Depression. Other forecasts are equally alarming. According to the International Institute of Finance, global debt may have surpassed $255 trillion by 2020 (IIF, 2019). Yet another study revealed that global debts and liabilities amounted to a staggering $2.5 quadrillion (Ausman, 2018). The reader should note that these figures were tabulated before the COVID-19 outbreak. The IMF singles out widening income inequality as the trigger for the next Great Depression (Georgieva, 2020). The wealthiest 1% now own more than twice as much wealth as 6.9 billion people (Coffey et al, 2020) and this chasm is widening with each passing month. COVID-19 had, in fact, boosted global billionaire wealth to an unprecedented $10.2 trillion by July 2020 (UBS-PWC, 2020). Global GDP, worth $88 trillion in 2019, may have contracted by 5.2% in 2020 (World Bank, 2020). As the Greek historian Plutarch warned in the 1st century AD: “An imbalance between rich and poor is the oldest and most fatal ailment of all republics” (Mauldin, 2014). The stability of a society, as Aristotle argued even earlier, depends on a robust middle element or middle class. At the rate the global middle class is facing catastrophic debt and unemployment levels, widespread social disaffection may morph into outright anarchy (Maavak, 2012; DCDC, 2007). Economic stressors, in transcendent VUCA fashion, may also induce radical geopolitical realignments. Bullions now carry more weight than NATO’s security guarantees in Eastern Europe. After Poland repatriated 100 tons of gold from the Bank of England in 2019, Slovakia, Serbia and Hungary quickly followed suit. According to former Slovak Premier Robert Fico, this erosion in regional trust was based on historical precedents – in particular the 1938 Munich Agreement which ceded Czechoslovakia’s Sudetenland to Nazi Germany. As Fico reiterated (Dudik & Tomek, 2019): “You can hardly trust even the closest allies after the Munich Agreement… I guarantee that if something happens, we won’t see a single gram of this (offshore-held) gold. Let’s do it (repatriation) as quickly as possible.” (Parenthesis added by author). President Aleksandar Vucic of Serbia (a non-NATO nation) justified his central bank’s gold-repatriation program by hinting at economic headwinds ahead: “We see in which direction the crisis in the world is moving” (Dudik & Tomek, 2019). Indeed, with two global Titanics – the United States and China – set on a collision course with a quadrillions-denominated iceberg in the middle, and a viral outbreak on its tip, the seismic ripples will be felt far, wide and for a considerable period. A reality check is nonetheless needed here: Can additional bullions realistically circumvallate the economies of 80 million plus peoples in these Eastern European nations, worth a collective $1.8 trillion by purchasing power parity? Gold however is a potent psychological symbol as it represents national sovereignty and economic reassurance in a potentially hyperinflationary world. The portents are clear: The current global economic system will be weakened by rising nationalism and autarkic demands. Much uncertainty remains ahead. Mauldin (2018) proposes the introduction of Old Testament-style debt jubilees to facilitate gradual national recoveries. The World Economic Forum, on the other hand, has long proposed a “Great Reset” by 2030; a socialist utopia where “you’ll own nothing and you’ll be happy” (WEF, 2016). In the final analysis, COVID-19 is not the root cause of the current global economic turmoil; it is merely an accelerant to a burning house of cards that was left smouldering since the 2008 Great Recession (Maavak, 2020a). We also see how the four main pillars of systems thinking (diversity, interconnectivity, interactivity and “adaptivity”) form the mise en scene in a VUCA decade. Environmental What happens to the environment when our economies implode? Think of a debt-laden workforce at sensitive nuclear and chemical plants, along with a concomitant surge in industrial accidents? Economic stressors, workforce demoralization and rampant profiteering – rather than manmade climate change – arguably pose the biggest threats to the environment. In a WEF report, Buehler et al (2017) made the following pre-COVID-19 observation: The ILO estimates that the annual cost to the global economy from accidents and work-related diseases alone is a staggering $3 trillion. Moreover, a recent report suggests the world’s 3.2 billion workers are increasingly unwell, with the vast majority facing significant economic insecurity: 77% work in part-time, temporary, “vulnerable” or unpaid jobs. Shouldn’t this phenomenon be better categorized as a societal or economic risk rather than an environmental one? In line with the systems thinking approach, however, global risks can no longer be boxed into a taxonomical silo. Frazzled workforces may precipitate another Bhopal (1984), Chernobyl (1986), Deepwater Horizon (2010) or Flint water crisis (2014). These disasters were notably not the result of manmade climate change. Neither was the Fukushima nuclear disaster (2011) nor the Indian Ocean tsunami (2004). Indeed, the combustion of a long-overlooked cargo of 2,750 tonnes of ammonium nitrate had nearly levelled the city of Beirut, Lebanon, on Aug 4 2020. The explosion left 204 dead; 7,500 injured; US$15 billion in property damages; and an estimated 300,000 people homeless (Urbina, 2020). The environmental costs have yet to be adequately tabulated. Environmental disasters are more attributable to Black Swan events, systems breakdowns and corporate greed rather than to mundane human activity. Our JIT world aggravates the cascading potential of risks (Korowicz, 2012). Production and delivery delays, caused by the COVID-19 outbreak, will eventually require industrial overcompensation. This will further stress senior executives, workers, machines and a variety of computerized systems. The trickle-down effects will likely include substandard products, contaminated food and a general lowering in health and safety standards (Maavak, 2019a). Unpaid or demoralized sanitation workers may also resort to indiscriminate waste dumping. Many cities across the United States (and elsewhere in the world) are no longer recycling wastes due to prohibitive costs in the global corona-economy (Liacko, 2021). Even in good times, strict protocols on waste disposals were routinely ignored. While Sweden championed the global climate change narrative, its clothing flagship H&M was busy covering up toxic effluences disgorged by vendors along the Citarum River in Java, Indonesia. As a result, countless children among 14 million Indonesians straddling the “world’s most polluted river” began to suffer from dermatitis, intestinal problems, developmental disorders, renal failure, chronic bronchitis and cancer (DW, 2020). It is also in cauldrons like the Citarum River where pathogens may mutate with emergent ramifications. On an equally alarming note, depressed economic conditions have traditionally provided a waste disposal boon for organized crime elements. Throughout 1980s, the Calabria-based ‘Ndrangheta mafia – in collusion with governments in Europe and North America – began to dump radioactive wastes along the coast of Somalia. Reeling from pollution and revenue loss, Somali fisherman eventually resorted to mass piracy (Knaup, 2008). The coast of Somalia is now a maritime hotspot, and exemplifies an entwined form of economic-environmental-geopolitical-societal emergence. In a VUCA world, indiscriminate waste dumping can unexpectedly morph into a Black Hawk Down incident. The laws of unintended consequences are governed by actors, interconnections, interactions and adaptations in a system under study – as outlined in the methodology section. Environmentally-devastating industrial sabotages – whether by disgruntled workers, industrial competitors, ideological maniacs or terrorist groups – cannot be discounted in a VUCA world. Immiserated societies, in stark defiance of climate change diktats, may resort to dirty coal plants and wood stoves for survival. Interlinked ecosystems, particularly water resources, may be hijacked by nationalist sentiments. The environmental fallouts of critical infrastructure (CI) breakdowns loom like a Sword of Damocles over this decade. Geopolitical The primary catalyst behind WWII was the Great Depression. Since history often repeats itself, expect familiar bogeymen to reappear in societies roiling with impoverishment and ideological clefts. Anti-Semitism – a societal risk on its own – may reach alarming proportions in the West (Reuters, 2019), possibly forcing Israel to undertake reprisal operations inside allied nations. If that happens, how will affected nations react? Will security resources be reallocated to protect certain minorities (or the Top 1%) while larger segments of society are exposed to restive forces? Balloon effects like these present a classic VUCA problematic. Contemporary geopolitical risks include a possible Iran-Israel war; US-China military confrontation over Taiwan or the South China Sea; North Korean proliferation of nuclear and missile technologies; an India-Pakistan nuclear war; an Iranian closure of the Straits of Hormuz; fundamentalist-driven implosion in the Islamic world; or a nuclear confrontation between NATO and Russia. Fears that the Jan 3 2020 assassination of Iranian Maj. Gen. Qasem Soleimani might lead to WWIII were grossly overblown. From a systems perspective, the killing of Soleimani did not fundamentally change the actor-interconnection-interaction- adaptivity equation in the Middle East. Soleimani was simply a cog who got replaced.

## Advantage 3 - Bioterrorism

### 1AC

#### Current guidelines on germline fail – need international legally binding frameworks

Dr Pin Lean Lau, 21, (Dr Pin Lean Lau, Dr Pin Lean Lau is a Lecturer in Bio-Law at Brunel University London, 11-15-2021, Brunel University London, Zombie apocalypse? How gene editing could be used as a weapon – and what to do about it, https://www.brunel.ac.uk/news-and-events/news/articles/Zombie-apocalypse-How-gene-editing-could-be-used-as-a-weapon-%E2%80%93-and-what-to-do-about-it, 6-29-2022) SCade

How to stop it

Do we stand a chance against such gene-edited pathogens? We have international law conventions on biological and chemical toxins. These strictly prohibit states from acquiring or retaining biological weapons. But it is questionable whether these are adequate in the face of novel approaches. Gene editing technologies such as CRISPR are getting cheaper and easier to work with. That means rogue scientists or organisations could use them for bioterrorism. Ideally, specific provisions in these international instruments should be revisited and adapted to the changing environment. This may include imposing a moratorium on experimenting with gene editing as biological weapon tools or allowing experimentation strictly for benefiting human health. In June, a WHO expert committee published two reports (see here and here) that made recommendations about how human genome editing could be governed at the appropriate institutional, national and global level. Its framework incorporates structures of governance that already exist in different countries, such as regulatory authorities or national guidelines regarding genome editing or similar technologies. It recommends, for example, that ethics committees review clinical trials and approvals in the area. While these recommendations provide some clarity, it is concerning that these are simply guidelines that do not have the force of law. The WHO is not in a position to regulate genome editing in individual countries. It therefore becomes incumbent on individual countries to implement these recommendations as part of their own national law. Another problem is that the guidelines do not address issues of safety and efficacy – stating this wasn’t part of the scope of the review. But that may change going forward. For now, these recommendations are the closest thing we have to a global framework of governance. And as the technology continues to develop, it is hoped that they will also evolve accordingly. But ultimately, we may need to think about how to make such frameworks legally binding. If all else fails, we might have to start working on our cardio and survival skills, and take a leaf out of the books of survivalist preppers.

#### United States action with NATO is necessary to create international norms banning the use of bioengineering

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Given the broad scope and scale of this growing threat, the United States should take a series of actions to mitigate the risks, without unduly stunting the growth of the biotechnology field. To date, bioterrorist attacks have been low-risk, high-impact events. While they have been extremely rare, their frequency will only increase as will their ramifications. However, overregulating the spread of biotechnological tools could stunt innovation and the profound potential of this increasingly important sector. Furthermore, existing methods of preventing bioterrorism may no longer be effective. The government could previously monitor the purchase of expensive and dangerous biotechnology tools and the laboratories that owned them in large quantities. This is no longer possible to the same degree when such tools are increasingly cheap, widespread, and usable in a garage. The FBI is currently attempting to address this risk by building relationships with the iGEM community and with life scientists so that they can report suspicious behavior. These efforts should continue, but are wildly insufficient, since some bioterrorists may have minimal contact with the larger community of biologists and biology hobbyists. The release of a bioweapon by a terrorist, if left unchecked, could spread throughout the globe, just as a naturally occurring pandemic would. Thus, one major step that the United States should take is to establish improved responses to disease outbreaks, particularly learning from COVID-19. This should include building a larger stockpile of PPE and establishing a set of clear step-by-step actions to be taken in the event of an attack. Building resilience in this fashion will not prevent bioterrorism, but it will mitigate its effects, and may slightly disincentivize utilizing bioweapons to cause terror. Beyond this, the United States should secure its laboratories and the data within, as terrorists could leverage that knowledge to build bioweapons. For example, new technology allows pathogens to be synthesized from the data describing their genetic sequences. In a recent controversial study, scientists published a methodology that would allow horsepox virus, a virus very similar to one that causes smallpox, to be synthesized. This research was conducted with a noble goal: understanding how the horsepox virus could be used as a potential treatment for cancer. However, it had significant dual-use implications. Research like this should not be banned outright, but the United States should establish norms to evaluate whether it is worth the risk before such research is conducted, and then ensure that it is conducted and the results published in the most secure ways. Replicability is an important part of science, but the general public should not be able to replicate the most dangerous experiments. Where building resilience would reduce the impact of a bioterror incident, restricting access to dual-use methodologies will reduce the likelihood of one occurring in the first place. Finally, enforcing domestic standards is not enough. Pathogens spread across borders, and the spillover effects of even a targeted bioterrorist attack could kill many unintended victims. Thus, the United States must work with other countries to protect against the bioterrorist threat, monitor the emergence of new viruses and bacteria that could be leveraged for a bioweapon, limit access to the most dangerous pathogens (and data associated with those), and build global response networks in the event of an attack. Importantly, this collaboration should emphasize working with allies, but should also include adversaries: if China or Russia remain unregulated, an attack within their borders would still affect the United States and its allies. Emerging biotechnology will result in new medicines and medical techniques, a greater understanding of how pathogens function and spread (and thus a better understanding of how to combat them), a healthier populace, innovative new capabilities that could transform daily life, and greater engagement with the biological sciences. While ensuring that these benefits are maintained, the United States and its allies and partners must take logical steps to protect themselves from the worst-case scenarios. The risk of bioterrorism is growing, and the United States must be prepared to face the future.

#### And the US is insufficiently prepared to deal with bioterror threats – COVID proved

Dr Pin Lean Lau, 21, (Dr Pin Lean Lau, Dr Pin Lean Lau is a Lecturer in Bio-Law at Brunel University London, 11-15-2021, Brunel University London, Zombie apocalypse? How gene editing could be used as a weapon – and what to do about it, https://www.brunel.ac.uk/news-and-events/news/articles/Zombie-apocalypse-How-gene-editing-could-be-used-as-a-weapon-%E2%80%93-and-what-to-do-about-it, 6-29-2022) SCade

It has been over a year since the World Health Organisation (WHO) declared COVID-19 a pandemic. And perhaps the most important lesson is that we were completely unprepared to face the debilitating virus. This raises some scary thoughts. What if the threat wasn’t COVID-19, but a gene-edited pathogen designed to turn us into zombies – ghost-like, agitated creatures with little awareness of our surroundings? With recent advances in gene editing, it may be possible for bioterrorists to design viruses capable of altering our behaviour, spreading such a disease and ultimately killing us. And chances are we still wouldn’t be sufficiently prepared to deal with it. A zombie apocalypse may sound far-fetched, reserved for the annals of graphic novels, immersive gaming experiences and popular culture. But there are examples of “zombification” in nature. Perhaps the most well known is rabies, which can cause aggression and hallucination and is almost always fatal once symptoms appear. But there are others. A recently discovered kind of wasp, for example, can turn a particular species of spider (Anelosimus eximius) into “zombies” by laying eggs on their abdomen. The resulting larvae then attaches itself to the spider, feeding on it, while the spider, once a social individual, leaves the colony and prepares to die alone. Other zombification examples from nature include the African sleeping sickness, a fatal neurological condition created by insect-borne parasites, and the Ophiocordyceps unilateralis fungus, which changes the behaviour of carpenter ants before killing them and sprouting out of their heads.

#### CRISPR can be weaponized – gene editing is already termed a WMD

Dr Pin Lean Lau, 21, (Dr Pin Lean Lau, Dr Pin Lean Lau is a Lecturer in Bio-Law at Brunel University London, 11-15-2021, Brunel University London, Zombie apocalypse? How gene editing could be used as a weapon – and what to do about it, https://www.brunel.ac.uk/news-and-events/news/articles/Zombie-apocalypse-How-gene-editing-could-be-used-as-a-weapon-%E2%80%93-and-what-to-do-about-it, 6-29-2022) SCade

Weaponising pathogens

Last year, the Nobel Prize in Chemistry recognised the development of a type of genetic scissors called CRISPR-Cas9. Interest in this technology has been simmering for a while, with equal doses of excitement and fear. Because of its ability to edit the human genome with unprecedented precision, replacing a single letter in the DNA, CRISPR has already proven itself useful in treating genetic conditions such as sickle cell disease, beta thalassemia, and many others. But CRISPR-Cas9 could theoretically also be used for darker purposes, such as bioterrorism. It could alter pathogens to make them more transmissible or fatal. Alternatively, it could turn a non-pathogen, such as a harmless microbe, into an aggressive virus. The technique may even be able to alter a virus to make it dangerous for a larger range of species than it currently infects, or make it resistant to antibiotics or antivirals. Whether CRISPR could be used to infect humans in a way to make them zombie-like remains a theoretical speculation. At the moment, there are probably easier ways to terrorise people. But as biotechnologies improve in the wake of COVID, the risk from bioterrorism is increasing. If a zombie-like disease could be created, it clearly wouldn’t make deceased people reawaken as zombies. But an infection that passed through saliva with extremely high transmission and mortality rate, and which caused agitation, destructive behaviour and death, wouldn’t be far off the horror that we see in zombie movies. Such a virus would spread rapidly from human to human in a similar manner to diseases such as Ebola and Marburg viruses. In the epic zombie film, 28 Days Later, the fictitious “rage virus” was, in fact, inspired by these two real-life viruses. Given these possibilities, it is not surprising that the director of the US National Intelligence, James Clapper, termed gene editing “weapons of mass destruction and proliferation” in 2018. Many countries are aware of the risks. In 2018, the US government released its first bio-defence strategy, involving multiple government agencies. The plan covers not only deliberate bioterror threats, but also “naturally occurring outbreaks and infectious diseases that escape a lab accidentally”. And, curiously, the US Department of Defense Strategic Command unit has issued a training programme called CONOP 8888 (Counter-Zombie Dominance), which simulates a zombie apocalypse situation. However, this was designed to be completely fictitious, providing military and defence training without the need to involve real, classified information. How to stop it Do we stand a chance against such gene-edited pathogens? We have international law conventions on biological and chemical toxins. These strictly prohibit states from acquiring or retaining biological weapons. But it is questionable whether these are adequate in the face of novel approaches. Gene editing technologies such as CRISPR are getting cheaper and easier to work with. That means rogue scientists or organisations could use them for bioterrorism.

#### And Human bioengineering resolves agent and delivery issues

Yelena Biberman, 21, (Yelena Biberman, Fall 2021, Strategic Studies Quarterly, “The Technologies and International Politics of Genetic Warfare”, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-15\_Issue-3/Biberman.pdf, 6-30-2022) SCade

Delivery problems have made biological weapons tactically unappealing.51 Effective delivery requires the deadly agent to reach its target. Doing so requires a robust agent and a reliable delivery mechanism. New technologies are enabling both. Most bacterial and viral agents struggle to maintain their virulence when confronted with common environmental factors, such as sunlight and humidity, and high temperatures or radical temperature changes. They also evolve and mutate. Genetic instability is typical for microorganisms. With increased transmissibility often comes reduced virulence. Production of virus molecules involves passage through host organisms. As the virus is not subject to any evolutionary pressure to maintain virulence during this scaling-up process, it tends to accumulate mutations that generate an attenuated strain. Similarly, bacteria cultured in laboratories tend to lose virulence.52 Gene editing and synthetic biology research are making strides in overcoming the problem of genetic instability. A study published in 2019 presented a new system, CRISPR-BEST. It created mutations in actinomycetes (bacteria that produce a wide variety of industrially and medically relevant compounds) without creating genetic instability and forcing them to rearrange and even delete large parts of their chromosomes.53 Synthetic biology is also increasingly embracing genetic instability rather than trying to suppress or compensate for it. With improved understanding, it is expected to design devices that incorporate genetic instability as a parameter.54 Such devices would be “a true frontier in biological engineering.”55

#### Biological weapons are just as destructive as nukes but are enormously easier to develop – extinction

Yelena Biberman, 21, (Yelena Biberman, Fall 2021, Strategic Studies Quarterly, “The Technologies and International Politics of Genetic Warfare”, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-15\_Issue-3/Biberman.pdf, 6-30-2022) SCade

Biological weapons have always been more accessible than nuclear ones. However, with genetic engineering increasingly solving the problems of weaponization, delivery, and precision, Ebola expert Karl Johnson predicts that “any crackpot with a few thousand dollars’ worth of equipment and a college biology education under his belt could manufacture bugs that would make Ebola look like a walk around the park.”88 Predictions about genetic warfare would benefit from identifying the closest parallels and then adjusting and synthesizing the ensuing models. Genetic weapons have the destructive potential of nuclear weapons, but their ease of development is akin to cyber weapons. Both genetic and cyber warfare require inexpensive equipment and only a college-level understanding of these fields. Unlike nuclear weapons that demand enormous engineering expertise, a small team can develop and hone cyber and genetic weapons using common equipment.89

#### The Aff solves – banning use of germline means that equipment and ease of access severely decreases

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However, greater access to cheap but powerful biotechnology tools—and a reduced need for expertise in operating those tools—also is making it easier for malicious actors to utilize that technology for ill. Terrorist groups could use synthetic biology to craft bioweapons, using data to manufacture dangerous pathogens or modifying easily accessible pathogens to make them more virulent. At present, there are still some barriers to entry that prevent such actors from operating with free reign, as widespread access to certain pathogens, tools, and data is still limited. But these barriers will only continue to recede over the next decade. In evaluating the future of terrorism and counterterrorism, one must consider: How should the United States and its allies prepare to face the growing threat of bioterrorism?

### 2AC---Genome Sequencing Bad

#### Genome Sequencing Creates a New and more deadly Type of Warfare

Foley 13. (Mackenzie Foley (?). “Genetically Engineered Bioweapons: A New Breed of Weapons for Modern Warfare.” Dartmouth Journal of Undergrad Science, March 10, 2013. Applied Sciences Winter 2013. <https://sites.dartmouth.edu/dujs/2013/03/10/genetically-engineered-bioweapons-a-new-breed-of-weapons-for-modern-warfare/#:~:text=Although%20bioweapons%20have%20been%20used,the%20development%20of%20new%20bioweapons>. Last Accessed: June 28, 2022. shARK.)

Genome sequencing has given rise to a new generation of genetically engineered bioweapons carrying the potential to change the nature of modern warfare and defense. Introduction: Biological weapons are designed to spread disease among people, plants, and animals through the introduction of toxins and microorganisms such as viruses and bacteria. The method through which a biological weapon is deployed depends on the agent itself, its preparation, its durability, and the route of infection. Attackers may disperse these agents through aerosols or food and water supplies (1). Although bioweapons have been used in war for many centuries, a recent surge in genetic understanding, as well as a rapid growth in computational power, has allowed genetic engineering to play a larger role in the development of new bioweapons. In the bioweapon industry, genetic engineering can be used to manipulate genes to create new pathogenic characteristics aimed at enhancing the efficacy of the weapon through increased survivability, infectivity, virulence, and drug resistance (2). While the positive societal implications of improved biotechnology are apparent, the “black biology” of bioweapon development may be “one of the gravest threats we will face” (2). Limits of Past Bioweapons. Prior to recent advances in genetic engineering, bioweapons were exclusively natural pathogens. Agents must fulfill numerous prerequisites to be considered effective military bioweapons, and most naturally occurring pathogens are ill suited for this purpose (3). First, bioweapons must be produced in large quantities. A pathogen can be obtained from the natural environment if enough can be collected to allow purification and testing of its properties. Otherwise, pathogens could be produced in a microbiology laboratory or bank, a process which is limited by pathogen accessibility and the safety with which the pathogens can be handled in facilities. To replicate viruses and some bacteria, living cells are required. The growth of large quantities of an agent can be limited by equipment, space, and the health risks associated with the handling of hazardous germs (1). In addition to large-scale production, effective bioweapons must act quickly, be environmentally robust, and their effects must be treatable for those who are implementing the bioweapon (3). Recent Advances. As researchers continue to transition from the era of DNA sequencing into the era of DNA synthesis, it may soon become feasible to synthesize any virus whose DNA sequence is known (4). This was first demonstrated in 2001 when Dr. Eckard Wimmer re-created the poliovirus and again in 2005 when Dr. Jeffrey Taubenberger and Terrence Tumpey re-created the 1918 influenza virus (1). The progress of DNA synthesis technology will also allow for the creation of novel pathogens. According to biological warfare expert Dr. Steven Block, genetically engineered pathogens “could be made safer to handle, easier to distribute, capable of ethnic specificity, or be made to cause higher mortality rates” (2). The growing accessibility of DNA synthesis capabilities, computational power, and information means that a growing number of people will have the capacity to produce bioweapons. Scientists have been able to transform the four letters of DNA—A (adenine), C (cytosine), G (guanine), and T (thymine)—into the ones and zeroes of binary code. This transformation makes genetic engineering a matter of electronic manipulation, which decreases the cost of the technique (4). According to former Secretary of State Hillary Clinton, “the emerging gene synthesis industry is making genetic material more widely available […] A crude but effective terrorist weapon can be made using a small sample of any number of widely available pathogens, inexpensive equipment, and college-level chemistry and biology.” (5) Techniques to Enhance Efficacy of Bioweapons Scientists and genetic engineers are considering several techniques to increase the efficacy of pathogens in warfare. 1. Binary Biological Weapons This technique involves inserting plasmids, small bacterial DNA fragments, into the DNA of other bacteria in order to increase virulence or other pathogenic properties within the host bacteria (2). 2. Designer Genes according to the European Bioinformatics Institute, as of December 2012, scientists had sequenced the genomes of 3139 viruses, 1016 plasmids, and 2167 bacteria, some of which are published on the internet and are therefore accessible to the public (6). With complete genomes available and the aforementioned advances in gene synthesis, scientists will soon be able to design pathogens by creating synthetic genes, synthetic viruses, and possibly entirely new organisms (2). 3. Gene Therapy Gene therapy involves repairing or replacing a gene of an organism, permanently changing its genetic composition. By replacing existing genes with harmful genes, this technique can be used to manufacture bioweapons (2). 4. Stealth Viruses Stealth viruses are viral infections that enter cells and remain dormant for an extended amount of time until triggered externally to cause disease. In the context of warfare, these viruses could be spread to a large population, and activation could either be delayed or used as a threat for blackmail (2).5. Host-Swapping Diseases Much like the naturally occurring West Nile and Ebola viruses, animal viruses could potentially be genetically modified and developed to infect humans as a potent biowarfare tactic (2). 6. Designer Diseases Biotechnology may be used to manipulate cellular mechanisms to cause disease. For example, an agent could be designed to induce cells to multiply uncontrollably, as in cancer, or to initiate apoptosis, programmed cell death (2). 7. Personalized Bioweapons In coming years it may be conceivable to design a pathogen that targets a specific person’s genome. This agent may spread through populations showing minimal or no symptoms, yet it would be fatal to the intended target (4). Biodefense In addition to creating bioweapons, the emerging tools of genetic knowledge and biological technology may be used as a means of defense against these weapons. 1. Human Genome Literacy As scientific research continues to reveal the functions of specific genes and how genetic components affect disease in humans, vaccines and drugs can be designed to combat particular pathogens based on analysis of their particular molecular effect on the human cell (2). 2. Immune System Enhancement In addition to enabling more effective drug development, human genome literacy allows for a better understanding of the immune system. Thus, genetic engineering can be used to enhance human immune response to pathogens. As an example, Dr. Ken Alibek is conducting cellular research in pursuit of protection against the bioweapon anthrax (2). 3. Viral and Bacterial Genome Literacy Decoding the genomes of viruses and bacteria will lead to molecular explanations behind virulence and drug resistance. With this information, bacteria can be engineered to produce bioregulators against pathogens. For example, Xoma Corporation has patented a bactericidal/permeability-increasing (BPI) protein, made from genes inserted into bacterial DNA, which reverses the resistance characteristic of particular bacteria against some popular antibiotics (2). 4. Efficient Bio-Agent Detection and Identification Equipment Because the capability of comparing genomes using DNA assays has already been acquired, such technology may be developed to identify pathogens using information from bacterial and viral genomes. Such a detector could be used to identify the composition of bioweapons based on their genomes, reducing present-day delays in resultant treatment and/or preventive measures (2). 5. New Vaccines Current scientific research projects involve genetic manipulation of viruses to create vaccines that provide immunity against multiple diseases with a single treatment (2). 6. New Antibiotics and Antiviral Drugs Currently, antibiotic drugs target DNA synthesis, protein synthesis, and cell-wall synthesis processes in bacterial cells. With an increased understanding of microbial genomes, other proteins essential to bacterial viability can be targeted to create new classes of antibiotics. Eventually, broad-spectrum, rather than protein-specific, anti-microbial drugs may be developed (2). Future of Warfare The revolution in molecular biology and biotechnology can be considered as a potential Revolution of Military Affairs (RMA),” states Colonel Michael Ainscough, MD, MPH (2). According to Andrew Krepinevich, who originally coined the term RMA, “technological advancement, incorporation of this new technology into military systems, military operational advancement, and organizational adaptation in a way that fundamentally alters the character and conduct of conflict” are the four components that make up an RMA. For instance, the Gulf War has been classified as the beginning of the space information warfare RMA. “From the technological advances in biotechnology, biowarfare with genetically engineered pathogens may constitute a future such RMA,” says Ainscough (2). In addition, the exponential increase in computational power combined with the accessibility of genetic information and biological tools to the general public and lack of governmental regulation raise concerns about the threat of biowarfare arising from outside the military (7). The US government has cited the efforts of terrorist networks, such as al Qaida, to recruit scientists capable of creating bioweapons as a national security concern and “has urged countries to be more open about their efforts to clamp down on the threat of bioweapons” (5). Despite these efforts, biological research that can potentially lead to bioweapon development is “far more international, far more spread out, and far more diverse than nuclear science […] researchers communicate much more rapidly with one another by means that no government can control […] this was not true in the nuclear era,” according to David Kay, former chief U.S. weapons inspector in Iraq (7). Kay is “extraordinarily pessimistic that we [the United States] will take any of the necessary steps to avoid the threat of bioweapons absent their first actual use” (7). “There are those who say: ‘the First World War was chemical; the Second World War was nuclear; and that the Third World War – God forbid – will be biological’” (2).

### 2AC---Break Out Programs

#### Bioweapons cause threats in both production and ‘break-out’ programs – banning solves for defensive program justification

Gronlund 18. (Kristen Gronlund, Kirsten Gronlund is a writer and researcher with an interest in policy issues. She majored in English at Cornell University and double minored in neurobiology and philosophy. “Genome Editing and the Future of Biowarfare: A Conversation with Dr. Piers Millett.” The Future of Life Institute, October 12, 2018. <https://futureoflife.org/2018/10/12/genome-editing-and-the-future-of-biowarfare-a-conversation-with-dr-piers-millett/>. Last Accessed: June 29, 2022, shARK).

Large-scale bioweapons programs, such as those run by states, pose a double threat: there is always the possibility of accidental release alongside the potential for malicious use. Millett believes that these threats are roughly equal, a conclusion backed by a thousand page report from Gryphon Scientific, a US defense contractor. Historically, both accidental release and malicious use of biological agents have caused damage. In 1979, there was the accidental release of aerosolized anthrax from the Sverdlovsk bioweapons production facility in the Soviet Union – a clogged air filter in the facility had been removed, but had not been replaced. Ninety-four people were affected by the incident and at least 64 died, along with a number of livestock. The Soviet secret police attempted a cover-up and it was not until years later that the administration admitted the cause of the outbreak. More recently, Millett says, a US biodefense facility “failed to kill the anthrax that it sent out for various lab trials, and ended up sending out really nasty anthrax around the world.” Though no one was infected, a 2015 government investigation revealed that “over the course of the last decade, 86 facilities in the United States and seven other countries have received low concentrations of live spore samples… thought to be completely inactivated.” These incidents pale, however, in comparison with Japan’s intentional use of biological weapons during the 1930s and 40s. There is “a published history that suggests up to 30,000 people were killed in China by the Japanese biological weapons program during the lead up to World War II. And if that data is accurate, that is orders of magnitude bigger than anything else,” Millett says. Given the near-impossibility of controlling the spread of disease, a deliberate attack may have accidental effects far beyond what was intended. The Japanese, for example, may have meant to target only a few Chinese villages, only to unwittingly trigger an epidemic. There are reports, in fact, that thousands of Japan’s own soldiers became infected during a biological attack in 1941.Despite the 1972 ban on biological weapons programs, Millett believes that many countries still have the capacity to produce biological weapons. As an example, he explains that the Soviets developed “a set of research and development tools that would answer the key questions and give you all the key capabilities to make biological weapons.” The BWC only bans offensive research, and “underneath the umbrella of a defensive program,” Millett says, “you can do a whole load of research and development to figure out what you would want to weaponize if you were going to make a weapon.” Then, all a country needs to start producing those weapons is “the capacity to scale up production very, very quickly.” The Soviets, for example, built “a set of state-based commercial infrastructure to make things like vaccines.” On a day-to-day basis, they were making things the Soviet Union needed. “But they could be very radically rebooted and repurposed into production facilities for their biological weapons program,” Millett explains. This is known as a “breakout program.”Says Millett, “I believe there are many, many countries that are well within the scope of a breakout program … so it’s not that they necessarily at this second have a fully prepared and worked-out biological weapons program that they can unleash on the world tomorrow, but they might well have all of the building blocks they need to do that in place, and a plan for how to turn their existing infrastructure towards a weapons program if they ever needed to. These components would be permissible under current international law.”

### 2AC---CRISPR BioTerror

#### CRISPR creates new biothreats

Gronlund 18. (Kristen Gronlund, Kirsten Gronlund is a writer and researcher with an interest in policy issues. She majored in English at Cornell University and double minored in neurobiology and philosophy. “Genome Editing and the Future of Biowarfare: A Conversation with Dr. Piers Millett.” The Future of Life Institute, October 12, 2018. <https://futureoflife.org/2018/10/12/genome-editing-and-the-future-of-biowarfare-a-conversation-with-dr-piers-millett/>. Last Accessed: June 29, 2022, shARK).

Developments such as CRISPR present new possibilities for biowarfare, but biological weapons caused concern long before the advent of gene editing. The first recorded use of biological pathogens in warfare dates back to 600 BC, when Solon, an Athenian statesman, poisoned enemy water supplies during the siege of Krissa. Many centuries later, during the 1346 AD siege of Caffa, the Mongol army catapulted plague-infested corpses into the city, which is thought to have contributed to the 14th century Black Death pandemic that wiped out up to two thirds of Europe’s population. Though biological weapons were internationally banned by the 1925 Geneva Convention, state biowarfare programs continued and in many cases expanded during World War II and the Cold War. In 1972, as evidence of these violations mounted, 103 nations signed a treaty known as the Biological Weapons Convention (BWC). The treaty bans the creation of biological arsenals and outlaws offensive biological research, though defensive research is permissible. Each year, signatories are required to submit certain information about their biological research programs to the United Nations, and violations reported to the UN Security Council may result in an inspection. But inspections can be vetoed by the permanent members of the Security Council, and there are no firm guidelines for enforcement. On top of this, the line that separates permissible defensive biological research from its offensive counterpart is murky and remains a subject of controversy. And though the actual numbers remain unknown, pathologist Dr. Riedel asserts that “the number of state-sponsored programs has increased significantly during the last 30 years.”

#### Bioengineering allows for precision delivery of weapons to targeted groups or individuals

Yelena Biberman, 21, (Yelena Biberman, Fall 2021, Strategic Studies Quarterly, “The Technologies and International Politics of Genetic Warfare”, https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-15\_Issue-3/Biberman.pdf, 6-30-2022) SCade

Precision

Could a weaponized biological agent be delivered to the intended target and affect only that target? This is the problem of precision, and, like the problems of weaponizability and delivery, it had made biological weapons unreliable. New technologies allow precise or selective targeting by tailoring deadly agents specifically for a given group or individual. The idea of using genetic information to target specific groups with biological or chemical weapons was first publicly aired in 1970 in Military Review, the US Army’s professional journal. The article considers the prospect of weaponizing genetic differences—specifically in the activities of enzymes—between different ethnic groups. That is, certain groups may be more vulnerable than others to a given naturally occurring agent.63 Written before the age of genetic engineering and biotechnology, the article drastically underestimates what is possible.

### A2: Can’t acquire weapons

#### CRISPR lowers the barrier to entry for bioweapons

Cropper 20. (Nicholas Cropper, Nicholas is a Climate and Energy Security Intern for American Security Project with expertise in Paleoecology, Genetic Engineering, Climate Change, and U.S. National Security. Nicholas Cropper graduated from the University of South Florida with a bachelor’s degree in Biology. As an undergraduate, he did paleolimnology research studying the ecological impacts of human development on a chain of lakes near Orlando. As an intern at ASP, Nick will delve into the impact climate change will have on military resiliency as well as the downstream effects of ecological degradation. The U.S. will have to contend with novel economic and national security challenges as the planet warms. Understanding and preparing for those challenges will be a key focus of Nick’s work. “CRISPR is Making Bioweapons More Accessible.” American Security Project, April 29, 2020. <https://www.americansecurityproject.org/crispr-is-making-bioweapons-more-accessible/>. Last accessed Jun 29, 2022. shARK)

[Charts Omitted]

CRISPR-Cas9 has dramatically improved the usability of genetic engineering, lowering the barrier to entry for the average person both financially and technically. Much of the science is available for free on the internet, giving anyone with an internet connection and determination access to all of the knowledge necessary to successfully perform a genetic edit. Additionally, because CRISPR-Cas9 can be done in your kitchen, the operational footprint is quite small. What’s left is how any particular application of CRISPR-Cas9 could be used as a weapon and what the potential is for mitigation. Scientists at the National Academy of Sciences have sorted potential applications into relative levels of concern. The top three concerns share one particularly troubling characteristic; they’re the simplest applications of genetic engineering technology**.** Making existing bacteria more dangerous and altering organisms to produce different biochemicals are common lab practices around the world today. Recreating known viruses sounds difficult, but in 2002 scientists successfully recreated the Polio virus from only the publicly available genome and mail-order biomolecules. That experiment was conducted before the discovery of CRISPR-Cas9 and the method has only become easier in the intervening years. Everything discussed up to this point is possible today with limited resources and scientific know-how. Given more resources and a team of experts, like in a state-run lab, the possibilities are morbidly endless.Alan Shaffer, the Deputy Under Secretary of Defense for Acquisition and Sustainment, explained in his recent testimony to Congress that scientific advances are rapidly outpacing the ability to manage their consequences: **“**Science is revealing the means to weaponize biology and chemistry in ways that were purely theoretical only 10 years ago. As we continue to move forward, it’s becoming increasingly apparent that creativity is our limit, not science.” COVID-19 has proven how ill-equipped America is to deal with novel infectious diseases**.** The U.S. is currently constructing a facility that will allow the Department of Defense to rapidly develop and produce limited medical countermeasures to a bioweapon, but that’s a baby step compared to what’s needed**.** Improving interagency cooperation on public health infrastructure, collaborating with international partners, and imposing reasonable restrictions on the sale of key biomolecules needs to happen ASAP if we’re to contain the bioweapon threat. Biotechnology is advancing far faster than the world around it. Failing to keep up with the pace of science when so much is at stake is not an option.

### 2AC---Germline undetected

#### Germline weapons could go undetected – making them even more dangerous

CROSS 18. (Ryan Cross covers the science and business of the biotech industry and drug discovery for the Boston Globe. He was previously a biotech reporter for Chemical & Engineering News where led coverage of COVID-19 vaccines. He has also written for MIT Technology Review and Science magazine. “Synthetic Biology Poses New Biosecurity Risks: Report from National Academies Categorizes a Dozen Scenarios from Highest to Lowest Concern.” C&EN Global Enterprise, vol. 96, no. 26, June 2018, p. 16. EBSCOhost, <https://doi.org/10.1021/cen-09626-polcon1>. Last Accessed: June 29, 2022, shARK).

The report, released last week by the National Academies of Sciences, Engineering, & Medicine, identifies a dozen ways that synthetic biology could be used to create biological weapons to harm humans. “Synthetic biology has the potential to enable new types of weapons,” says Michael J. Imperiale, a microbiologist at the University of Michigan Medical School and chair of the committee that authored the report. The committee identified three concerns of highest priority, including recreating pathogenic viruses such as Ebola, SARS, or smallpox. The second is engineering bacteria to make them more dangerous, which could be easily accomplished by inserting genes to confer antibiotic resistance. “Capabilities to do either of those have been around for a long time. They are only becoming more readily available,” Imperiale says. The third major concern is engineering microbes to produce and release toxic biochemicals. **“**The effects could resemble a chemical weaponor food poisoning**,”** says Patrick Boyle, head of design at Ginkgo Bioworks and an author of the new report. That scenario is particularly worrisome because it isunclear how long it would take scientists to detect that a maliciously engineered microbe was at play rather than a natural pathogen**.** “The report was extremely well done and delivered something that has potential to be useful for policy-makers,” because it prioritized potential threats, says Margaret E. Kosal, a chemist by training and currently a professor of international affairs at Georgia Institute of Technology, who reviewed a draft of the report. “If everything is a problem, then nothing gets addressed,” she says. The report highlights one recently published scientific study outlining how to construct a horsepox virus, a relative of smallpox thought to be extinct in nature. Many biodefense experts, including Gregory Koblentz of George Mason University, have warned that synthetic biology tools could enable recreation of smallpox. “Safeguards against the misuse of those tools are weak and fragmented,” he says. Currently, some synthetic biology companies choose to run their own safeguards. Twist Bioscience uses computer programs to scan its DNA orders, and James Diggans, director of bioinformatics and biosecurity, says the company would have easily detected the horsepox DNA due to its similarity to smallpox. “That would have triggered internal review,” Diggans says. That virus is “not something we would be comfortable manufacturing,” he adds. Diggans, who also reviewed a draft of the report, applauds the “balanced treatment of the incredibly positive impact of synthetic biology and its risks.” However, he thinks that synthetic biology doesn’t actually make building biological weapons easier. Kosal concurs. “Making ineffective biological weapons is easy,” she says. “Making effective biological weapons is not easy.” —RYAN CROSS

### 2AC---No Countermeasures

#### No countermeasures to CRISPR bioterror

Antonio Regalado, 19, (Antonio Regalado, 5-2-2019, MIT Technology Review, The search for the kryptonite that can stop CRISPR, https://www.technologyreview.com/2019/05/02/65813/the-search-for-the-kryptonite-that-can-stop-crispr/, 6-28-2022) SCade

In September 2016, Jennifer Doudna called a new colleague named Kyle Watters to her office. By then, the University of California, Berkeley, biochemist was famous as the coinventor of CRISPR. The invention of the fast and versatile tool to edit genes had vaulted her to global notoriety and to considerable wealth. She was the founder of several startup companies and had collected millions in science-prize money. Ominously, though, as Doudna has recounted, she was haunted by a dream in which Adolf Hitler appeared, holding a pen and paper, requesting a copy of the CRISPR recipe. What horrible purpose could Hitler have? Doudna, in her retellings of her dream, didn’t say. Now Doudna’s question was, would Watters like to work on a way to stop it? Stop CRISPR. CRISPR is found inside bacteria. It’s a billion-year-old defense against marauding viruses that spots their DNA and uses a scissors-like protein to chop it up. Doudna played a key role in transforming the find into a revolutionary gene-editing tool that’s been taken up worldwide, propelling a wave of new research and potential cures. But if scientists learn to deliver gene editors inside people’s bodies, what’s to stop a madman, terrorist, or state from employing CRISPR to cause harm? People imagine personalized attacks that would strike only at certain ethnic groups or super soldiers edited to feel no pain. Doudna was well familiar with the dilemma. In her book A Crack in Creation, she wrote that she feared gene editing could come to the world’s attention, as atomic power did, in a mushroom cloud. “Could I and other concerned scientists save CRISPR from itself … before a cataclysm occurred?” Now she would have a chance. Earlier in 2016, the US intelligence agencies had designated gene editing as a potential weapon of mass destruction. That September, the Defense Advanced Research Projects Agency (DARPA) had jumped in, putting out a call for new ways to control or reverse the effects of gene-editing technology. The program, called Safe Genes, would end up with a budget of more than $65 million, making it one of the largest sources of cash for CRISPR research, aside from biotech startups developing new genetic treatments. One problem, as DARPA saw it, was the lack of any easy-to-use countermeasure, undo button, or antidote for CRISPR. And the more powerful gene editing becomes, the more we might need one—in case of a lab accident, or worse. As UC Berkeley put it in a 2017 press release after Doudna, with Watters’s help, claimed part of the big DARPA contract, the university intended to build tools to counter bioterrorism threats including “weapons employing CRISPR itself.” CRISPR weapons? We’ll leave it to your imagination exactly what one could look like. What is safe to say, though, is that DARPA has asked Doudna and others to start looking into prophylactic treatments or even pills you could take to stop gene editing, just the way you can swallow antibiotics if you’ve gotten an anthrax letter in the mail. Scientists under Doudna’s project say they are set to begin initial tests on mice to see if the rodents can be made immune to CRISPR editors. “Can we shut off CRISPR?” asks Joseph S. Schoeniger, who leads one arm of the defense effort at Sandia National Laboratories, in Livermore, California. “That is what we are looking at. The basic concept is that this technology is coming along, [so] wouldn’t it be nice to have an ‘off’ switch.”

## Solvency

### Bans work

#### An absolute and explicit ban is the only option – a possibility of violating the ban only means we should be more vigilant about the plan – any alternative to a ban is reckless

Hurlbut, J.B. (2020).the author of Experiments in Democracy: Human Embryo Research and the Politics of Bioethics (Columbia University Press, 2017) and co-editor of Perfecting Human Futures: Transhuman Visions and Technological Imaginations, (Dordrecht: Springer, 2016), as well as numerous articles and book chapters. He holds an A.B. from Stanford University and a Ph.D. in the History of Science from Harvard University. He was a postdoctoral fellow in the program on Science, Technology and Society at the Harvard Kennedy School. Imperatives of Governance: Human Genome Editing and the Problem of Progress. *Perspectives in Biology and Medicine* *63*(1), 177-194. [doi:10.1353/pbm.2020.0013](http://doi.org/10.1353/pbm.2020.0013). /nfs

Why should this be? In what other domain of social life do we treat the violation of a prohibition as justification for abandoning that prohibition? We do not accept thievery and murder simply because there are always thieves and murderers in any society. Why should we respond to what David Baltimore in his rebuke to He at the Second International Summit described as “a failure of self-regulation by the scientific community” by doubling down on self-regulation by the scientific community (Statement of David Baltimore 2018)? Surely the judgment of an individual scientist, an advisory committee or even a whole professional community should not be privileged over a societal commitment to democratic governance simply because scientists feel constrained in their freedom to do what they want. Certainly it is challenging to achieve a democratic and cosmopolitan bioethics sufficient to govern a technology that “touches on the whole of humanity” (Hurlbut et al. 2018; Feinstein et al. 2019). Surely this means that we must redouble our efforts, not abandon them. Far from casting aside the aspiration to “broad societal consensus,” we should see with clear eyes what happens when scientists (and, thus, science) are left to decide for themselves the future of humanity. He’s hubristic project was an act of appropriation and has rightly been condemned as such. But so too is the move to substitute “broad scientific consensus on the responsible pursuit of human genome editing research and clinical applications” for “broad societal consensus” about our common future (Dzau, McNutt, and Bai 2018; Organizing Committee for the International Summit on Human Gene Editing 2015, emphasis added). One of the most startling features of the He debacle is the sense of urgency to race ahead that it has engendered in the upper echelons of international science. It is one thing for a young, ambitious and reckless scientist operating at “Shenzhen speed” to put the pedal to the floor (Kirksey 2020). When the leaders of international science declare an “urgent need to accelerate efforts,” hitting the gas in hot pursuit of runaway science that they themselves have branded as “rogue,” they are recklessly committing to a race of their own making (Dzau, McNutt and Bai 2018). Why not call a halt instead? In fact, some have done just that, calling for an explicit, international moratorium on creating genome-edited babies for a defined period of time (Lander et al 2019). It is extraordinary—and revealing—that this apparently unobjectionable proposal has itself become a focus of controversy. Opponents have argued that a de facto moratorium is already in place, but object to making it explicit by using the term itself (Begley 2019). The objection comes down to a preference for self-imposed scientific limitation, so that the scientists who impose limits at one moment are free to lift them in the next. David Baltimore has argued: The important point is to be flexible going forward. That’s what’s wrong with a moratorium. It’s that the idea gets fixed in people’s minds that we’re making firm statements about what we don’t want to do and for how long we don’t want to do it. With a science that’s moving forward as rapidly as this science is, you want to be able to adapt to new discoveries, new opportunities and new understandings. To make rules is probably not a good idea. (Saey 2019) Yet setting a rule that clearly prohibited HGGE—and threatening excommunication from international science for violating it—is precisely what would have restrained He and his boosters. Given this, why not make firm statements about “what we don’t want to do”? Yet, setting rules for what should or should not be done is not the remit of science alone. The question of whether to proceed, particularly on a matter that touches upon such fundamental dimensions of human life, belongs to all of us. There has not yet been a serious effort to invite inclusive public deliberation, to say nothing of anything resembling consensus. Why, therefore, should the default be to let research go forward? The reason is that what is at stake for the opponents of the moratorium proposal is not merely governance of genome editing, but scientific freedom as such—the sovereign authority of science to self-regulate and self-govern. As Baltimore explains: restricting gene editing “could hold back the science” (Saey 2019). In other words, science should race ahead, and ethics should lag behind—after all, “there’s nothing like actually moving ahead [with research] to teach us what the actual pitfalls are” (Saey 2019). But surely He Jiankui has already made it abundantly clear that the pitfall of blindly and recklessly moving ahead is that one moves ahead blindly and recklessly.

#### Value ethics first – the negative arguments against a ban are an example of manufactured inevitability. Urgent need to protect absolutely.

**Hurlbut**, J.B. (20**20**).Quals: He is the author of Experiments in Democracy: Human Embryo Research and the Politics of Bioethics (Columbia University Press, 2017) and co-editor of Perfecting Human Futures: Transhuman Visions and Technological Imaginations, (Dordrecht: Springer, 2016), as well as numerous articles and book chapters. He holds an A.B. from Stanford University and a Ph.D. in the History of Science from Harvard University. He was a postdoctoral fellow in the program on Science, Technology and Society at the Harvard Kennedy School. Imperatives of Governance: Human Genome Editing and the Problem of Progress. *Perspectives in Biology and Medicine* *63*(1), 177-194. [doi:10.1353/pbm.2020.0013](http://doi.org/10.1353/pbm.2020.0013). /nfs

This narrative should now be familiar: a new technology raises “complex ethical and governance issues” yet also “outpaces” responses to them. The “scientific and medical communities” who drive forward development of the technology claim the authority and responsibility to respond, even as actions undertaken and encouraged by members of those communities “outpace” their own efforts to address those issues. Science first, ethics second. As we have seen, this story is a self-fulfilling prophesy. It is the story He told himself—and was told by others—to justify his experiment. Yet He’s experiment, driven by others’ predictions of inevitability, was then itself taken as proof that HGGE is inevitable. This is manufactured inevitability, and it is used to assert an imperative of governance: science races ahead irrespective of whether societal consensus is or is not achieved. Therefore governance must cease the futile effort to sail against the winds of scientific and technological change, shift course and catch up by “thoughtfully crafting regulations of the technology without stifling it” (Doudna 2019). The inevitable must be embraced because it is unavoidable. But it is unavoidable because it is embraced. In this vision of governance, catching up means ceasing to ask whether science has given us a technological future we wish to welcome or shun. It means acquiescing to what is (putatively) inevitable and then mitigating its negative effects as best we can. Governance—steering the ship—becomes on this view an ethically attenuated effort to regain a modicum of control: reclaiming the helm from a mutinous rogue who threatens the future of science, but nevertheless following the course he charted—in effect, doing responsibly what He did irresponsibly. “[The He] case highlights the urgent need to accelerate efforts to reach international agreement upon more specific criteria and standards that have to be met before human germline editing would be deemed permissible” (Dzau, McNutt and Bai 2018).

#### Experts support a ban – its narrowly tailored and still allows somatic engineering

ALICE PARK MARCH 13, 2019 2:22 PM EDT Experts Are Calling for a Ban on Gene Editing of Human Embryos. Here's Why They're Worried https://time.com/5550654/crispr-gene-editing-human-embryos-ban/

The ban applies only to a select set of studies that involve genetic changes to germline cells: studies that involve altering the genes in eggs, sperm or embryos that would then be transferred for pregnancy. The vast majority of genetic experts believe it’s too early for any technique, including CRISPR, to be used in this way, because the safety of the technology hasn’t been established yet. Although CRISPR, for example, gives scientists the most precise molecular scissors possible to snip human DNA exactly where disease-causing genes or mutations might reside — or to even replace portions of the genome with healthy DNA — studies in animals and cells in a lab dish show that sometimes the scissors splice where they aren’t supposed to. It’s also not clear what effect manipulating the human genome by removing or replacing fragments of DNA might have on people’s health — now, or for future generations. The moratorium calls for researchers and nations to suspend studies on human gene editing of eggs, sperm and embryos for about five years, and during that time, for countries agreeing to the ban to encourage societal discussion about how its citizens would like to see such work proceed. If a nation decided it was ready to begin conducting such studies again, it would share its plans with the international community, preferably two years ahead of time, so additional discussions could ensure that safety and ethical issues had been addressed. The moratorium does not apply to research on so-called somatic cells, or any other cell except the egg and sperm that are involved in reproduction. Somatic cells, such as blood and skin, are not passed on to the next generation, so any genetic changes made to a person’s own genome in these cells are not inherited. Promising studies involving gene editing to treat sickle cell, for example, won’t be affected by the ban. “Those clinical trials should not in any way be impeded by this,” says Collins. “The only focus on the moratorium is on embryos and germline manipulation with the intent to implant that embryo in the mother’s womb. It’s a very narrow prohibition. All the rest of the applications of gene editing should not only go forward, but should go forward vigorously and with great energy.”

#### Scientists and ethicists approve of a ban and say it will foster societal consensus

Terry Kaan, Vicki Xafis, Owen **Schaefer** Et al. 11-17-2021 [Kaan is affiliated with The University of Hong Kong, China; Xafis is affiliated with the National University of Singapore and a Journal of Medical Ethics resercher; Schaefer is an Assistant Professor of the Centre for Biomedical Ethics, Yong Loo Lin School of Medicine], “Germline genome editing: Moratorium, hard law, or an informed adaptive consensus,” <https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1009742> Cut By: m.jam

To begin with, there should be a fixed period during which **no clinical uses of germline editing whatsoever are allowed**. As well as **allowing for discussions** about the technical, scientific, medical, societal, ethical and moral issues that must be considered before germline editing is permitted, this period would provide time to establish an international framework. Thereafter, nations may choose to follow separate paths. About 30 nations currently have legislation that directly or indirectly bars all clinical uses of germline editing[1](https://www.nature.com/articles/d41586-019-00726-5#ref-CR1), and they might choose to continue the moratorium indefinitely or implement a permanent ban. However, any nation could also choose to allow specific applications of germline editing, provided that it first: gives **public notice** of its intention to consider the application and engages for a defined period in international consultation about the wisdom of doing so; determines through transparent evaluation that the application is justified; and **ascertains that there is broad societal consensus** in the nation about the appropriateness of the application. Nations might well choose different paths, but they would agree to proceed openly and with due respect to the opinions of humankind on an issue that will ultimately affect the entire species. To be clear, our proposed moratorium **does not** apply to germline editing for research uses, provided that these studies do not involve the transfer of an embryo to a person’s uterus. It also does not apply to genome editing in human somatic (non-reproductive) cells to treat diseases, for which patients can provide informed consent and the DNA modifications are not heritable. The 18 signatories of this call include **scientists and ethicists who are citizens of 7 countries**. Many of us have been involved in the gene-editing field by developing and applying the technology, organizing and speaking at international summits, serving on national advisory committees and studying the ethical issues raised.

#### International cooperation allows ban to be successful

L. Sophie Gullino January 2022 Human genome editing: unlimited potential or ethical concern?https://oxsci.org/human-genome-editing-unlimited-potential-or-ethical-concern/

As human gene editing has global public health implications, international cooperation is also essential to provide oversight. This can involve international agreements, institutions and bodies that can be developed following international discussion of the different views on gene editing. Notably, not all countries have committed the necessary resources to ensure appropriate and effective regulations of this technology. This introduces the risk of so-called “ethics dumping” which refers to scientists from strictly regulated countries purposefully choosing to conduct research in countries that lack the relevant domestic policy or oversight. This issue should clearly be addressed and international agencies are aiming to assist countries to create a regulatory framework which prevent the unethical use of this technology.

### Alternatives solve

#### Other successful ways to deal with genetic diseases besides germline editing

[Annie Sneed](https://www.scientificamerican.com/author/annie-sneed/) on April 15, 2019 Environmental Thinker Bill McKibben Sounds Warning on Technology https://www.scientificamerican.com/article/environmental-thinker-bill-mckibben-sounds-warning-on-technology/

I truthfully don't think that human genetic engineering offers us much in the way of benefit. If people are worried about genetic disease, we can already deal with that through preimplantation genetic diagnosis, which is used in fertility clinics around the world. It lets you make sure your child doesn't have a genetic disease, but it doesn't let you improve your child. So I don't think the benefits [of human germline genetic engineering] are very high, and the potential cost—in terms of meaning—is enormous.

#### Alternative methods to achieve germline ethical goals - and they are safer

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Part of the objection to GEHR is that for all the possible outcomes that GEHR may be expected to deliver, there are existing reproductive technologies for securing these outcomes. If this is the case, and these established procedures do not entail the same risks or uncertainties that GEHR does, then introducing GEHR could not be a proportionate means to achieve the desired outcome. What is this outcome? In most discussions of GEHR, this outcome is usually assumed to be the birth of a child with at least two preferred characteristics. The first is implicitly (although often only implicitly) the presence of a direct genetic link to both the prospective parents, which is achieved through the combining of their individual genomes, as happens in unassisted sexual reproduction. The second characteristic is the presence (or absence) of at least one other genetically conditioned feature that the combination of those genomes makes it unlikely (or likely) that any resulting child will inherit. Such a characteristic might be the absence of a serious disease that has been diagnosed in the prospective parents, like cystic fibrosis. Disease traits of this kind are usually assumed to be good candidates for the second characteristic. In such cases, however, GEHR is unlikely to be the only intervention available. There are reproductive technologies that involve the donation of sperm or eggs from third-party donors, thereby simply circumventing the genetic endowment from one parent. Since, however, these children would lack the first preferred characteristic (genetic relatedness), other approaches are also widely available in many (though not all) parts of the world. They involve genetic testing to select embryos for transfer (preimplantation genetic testing, or PGT) or to select pregnancies to carry to term (prenatal testing and termination of pregnancy, PNT/ToP).

### Not safe

#### We can’t identify correct genetic changes to make – regardless of advances in CRISPR technology.

Gregory E. Kaebnick is a research scholar at The Hastings Center and the editor of theHastings Center Report. A Moratorium on Gene Editing? March 27 2015 https://www.thehastingscenter.org/a-moratorium-on-gene-editing/

The second problem – identifying the correct genetic changes – is the real issue, though, and CRISPR/Cas9 doesn’t even address this problem. In fact, no gene editing tool can solve the second problem, any more than a word processing tool can by itself solve the problem of how to write the next great American novel. To identify the “correct” genetic changes, we need to understand what the targeted gene does, but also how it interacts with other genes, and also how the genome interacts with environments. We’re not there. As David Baltimore, a Nobel laureate and a member of one of the groups calling for a moratorium, told the Times,“I personally think we are just not smart enough — and won’t be for a very long time — to feel comfortable about the consequences.” This is the second and bigger reason that the moratorium is a good idea.

#### Scientific experts concede that germline gene editing is not safe or effective enough for use. Serious risk of introducing unintended mutations.

Lander, et.al. 2019 Eric S. Lander , Françoise Baylis , Feng Zhang , Emmanuelle Charpentier , Paul Berg , Catherine Bourgain , Bärbel Friedrich , J. Keith Joung , Jinsong Li , David Liu , Luigi Naldini , Jing-Bao Nie , Renzong Qiu , Bettina Schoene-Seifert , Feng Shao , Sharon Terry , Wensheng Wei & Ernst-Ludwig Winnacker 13 March 2019 Adopt a moratorium on heritable genome editing https://www.nature.com/articles/d41586-019-00726-5

For germline editing to even be considered for a clinical application, its safety and efficacy must be sufficient — taking into account the unmet medical need, the risks and potential benefits and the existence of alternative approaches. Although techniques have improved in the past several years, germline editing is not yet safe or effective enough to justify any use in the clinic. As was evident at the second summit, there is wide agreement in the scientific community that, for clinical germline editing, the risk of failing to make the desired change or of introducing unintended mutations (off-target effects) is still unacceptably high. Considerable research is being directed at this issue.

#### Germline gene editing is not effective – and can result in dangerous mutations.

Ormond, et.al. 2017 Kelly E.Ormond, Douglas P.Mortlock Derek T.Scholes, YvonneBombard, Lawrence C.Brody, W. AndrewFaucett, Nanibaa’ A.Garrison,LauraHercher RosarioIsas, Anna Middleton, KiranMusunuru,DanielShriner,AliceVirani1, Caroline E.Young Human Germline Genome Editing AJHG [Volume 101, Issue 2](https://www.sciencedirect.com/journal/the-american-journal-of-human-genetics/vol/101/issue/2), 3 August 2017, Pages 167-176 https://www.sciencedirect.com/science/article/pii/S0002929717302471

Regardless of whether it entails somatic or germline genome editing, its efficacy and safety must be established before any consideration is given to a genome-editing method as a potential therapeutic approach. CRISPR/Cas9 is indeed highly efficient in many cell types, but it is seldom 100% effective at introducing alterations at a target site, although double-digit percentages are routine. More concerning is that the desired “editing” event usually competes with the generation of unwanted mutations at the target site. Thus, genome-editing applications usually generate a mixture of genetically heterogeneous cells.

#### Editing isn’t safe – too many interactions and genomes we know nothing about.

Scott J. Schweikart, Global Regulation of Germline Genome Editing: Ethical Considerations and Application of International Human Rights Law, 43 Loy. L.A. Int'l & Comp. L. Rev. 279 (2021). Available at: https://digitalcommons.lmu.edu/ilr/vol43/iss3/6

Additionally, there is a significant level of uncertainty about the safety and potential consequences of germline genome editing. For instance, it is uncertain “whether current knowledge of human genes, genomes, and genetic variation and the interactions between genes and the environment is sufficient to enable heritable genome editing to be performed safely.”28

### NATO says yes

#### NATO can effectively influence norm setting in emerging technology.

Dr Ulf Ehlert Why our values should drive our technology choices 16 December 2021 https://www.nato.int/docu/review/articles/2021/12/16/why-our-values-should-drive-our-technology-choices/index.html

Within this broadly applicable framing, NATO’s role is specific. As the international organisation committed to defence and security in the North Atlantic area, it convenes considerable political, military, economic, and technological power. Building in particular on its political and intellectual capital, the Alliance can credibly spearhead norm setting for technology applications in defence to comply with Western values.

#### Strong international frameworks can resolve previous failures of self regulation.

Melanie Hess -2020 A Call for an International Governance Framework for Human Germline Gene Editing 95 Notre Dame Law Review 1369 https://scholarship.law.nd.edu/cgi/viewcontent.cgi?article=4899&context=ndlr

The failure of this self-regulation is perhaps a consequence of the fact that there is not currently a stronger international regulatory framework or set of principles guiding this subject. There is scant consensus on how to regulate and what to allow, and this is largely because despite the potential benefits of germline editing, the field is rife with controversy surrounding the “safety concerns, unprecedented informed consent, challenges to human dignity, and the potential for permanent negative impact on future generations, including its abuse for eugenics or enhancement (the parental pursuit of specific traits for non-medical reasons).”11 There is, however, a general consensus that no clinical applications should proceed until there is “broad societal consensus” involving the opinions of all social groups, perhaps on a global scale.12

#### Now is a critical time to build a stronger alliance with NATO

Paul Belkin Analyst in European Affairs <https://sgp.fas.org/crs/row/R46066.pdf> NATO: Key Issues for the 117th Congress Updated June 3, 2021

Throughout the course of the Trump Administration, Secretary General Stoltenberg stressed that disagreement among allies is not a new phenomenon and underscored that “Europe and North American are doing more together in NATO today than we have for decades.” 31 More recently, however, Stoltenberg has acknowledged that differences between Europe and the United States have raised “serious questions about the strength of our alliance on both sides of the Atlantic” and has pointed to the coming years as a “historic opportunity to build a stronger alliance. To regain trust, and reinforce our unity. Europe and North America working together in NATO, in strategic solidarity.” 32 When allied leaders met in London in 2019, they agreed to initiate a “forward-looking reflection process … to further strengthen NATO’s political dimension including consultation.” 33 Secretary General Stoltenberg has since launched the NATO 2030 Initiative to develop proposals to make sure “NATO remains strong militarily, becomes even stronger politically and takes a more global approach.” 34 Stoltenberg plans to present his proposals to allied heads of state and government at the June 2021 NATO summit. He says his recommendations will focus on the following three areas: • Reinforcing unity by increasing common funding for deterrence and the defense of NATO territory, agreeing to political consultations on all issues affecting member states’ security, and updating NATO’s Strategic Concept—last updated in 2010—to “chart a common course going forward;” • Broadening NATO’s approach to security beyond the military sphere to include societal resilience, increasing collective investments to maintain NATO’s technological edge and interoperability, and addressing the security impact of climate change; and • Defending the rules-based international order, and countering China’s and Russia’s challenges to this order, by strengthening NATO’s commitment to democratic values and enhancing its relationships with like-minded partners across the globe.35

#### NATO cooperation works- Croatia proves

Mena Report 04-12-2022 [Web Publication on Nexis Uni; Provided by Syndigate Media Inc; business news source established in 2001 and run by Al Bawaba], “Croatia : NATO highlights Croatias contribution to security through civil science and technology,” [https://advance-lexis-com.eu1.proxy.openathens.net/document/?pdmfid=1516831&crid=89a295d2-7c95-4c47-88f0-a2d2e82e199a&pddocfullpath=%2Fshared%2Fdocument%2Fnews%2Furn%3AcontentItem%3A656W-VFP1-JDJN-61D3-00000-00&pdcontentcomponentid=475523&pdteaserkey=sr2&pditab=allpods&ecomp=szznk&earg=sr2&prid=8ee402c5-3ec0-43d2-a9f7-fdfb624f9f16#](https://advance-lexis-com.eu1.proxy.openathens.net/document/?pdmfid=1516831&crid=89a295d2-7c95-4c47-88f0-a2d2e82e199a&pddocfullpath=%2Fshared%2Fdocument%2Fnews%2Furn%3AcontentItem%3A656W-VFP1-JDJN-61D3-00000-00&pdcontentcomponentid=475523&pdteaserkey=sr2&pditab=allpods&ecomp=szznk&earg=sr2&prid=8ee402c5-3ec0-43d2-a9f7-fdfb624f9f16)Cut By: m.jam

An Information Day took place in Zagreb on Friday (8 April 2022), marking the important achievements accomplished by Croatia in the framework of the **NATO Science** for Peace and Security (SPS) Programme. Scientists, experts, and government representatives met to take stock of the results of civil scientific cooperation attained amongst Croatia, NATO Allies, and partner countries. They also shared views on the prospects for potential new activities in security-related science and technological innovation, in line with Croatias research priorities. Over 60 participants attended the event, which was jointly organized by the **NATO Science** for Peace and Security Programme, the Croatian Ministry of Foreign and European Affairs, the Permanent Delegation of Croatia to NATO, and the University of Zagreb. It was also streamed online to link up several other universities in the country, including in Dubrovnik, Osijek and Split. At the official opening, NATO Assistant Secretary General for Emerging Security Challenges, David van Weel, stated: The Science for Peace and Security Programme is a central component of NATOs science and technology ecosystem, and it has been for over 60 years. During this time, it has helped to demonstrate NATOs commitment to scientific and technological advancement. Representing the host country, State Secretary Frano Matui highlighted Croatia's participation in 78 SPS projects in collaboration with Allies and partners from around the globe. He also stressed the importance of this Information Day to strengthen and expand future cooperation. At the margins of the event, Croatian research teams displayed various prototypes developed with support from the NATO Science for Peace and Security Programme, demonstrating their ability to address a wide range of contemporary security challenges and offer solutions with tangible deliverables. These include initiatives such as the development and deployment of the Next-generation Incident Command System (NICS), a web-based command and control software that facilitates collaboration among first responders during natural and man-made disasters. Experts from Bosnia and Herzegovina, Montenegro, Croatia, and North Macedonia, as well as the United States, worked together to implement and test this platform across the region, putting it to use in a variety of crisis scenarios. Research and development activities supported by the **NATO Science** for Peace and Security Programme have helped to identify innovative solutions to other security challenges of particular relevance, such as the detection of landmines and explosive hazards, as well as technological solutions to enhance security at border crossing points, airports and seaports. Moreover, events such as the yearly Zagreb Security Forum have fostered the exchange of lessons learned and expertise on hybrid challenges and resilience amongst a network of experts and officials in eastern and south eastern Europe. Through interactions with their peers from other NATO Allies and partner countries, Croatian scientists and experts have taken part in many activities within the framework of NATOs Science for Peace and Security Programme, on such security-related topics as counter-Terrorism, cyber defence, defence against chemical, biological, radiological and nuclear agents, environmental security, advanced technology, mine and unexploded ordnance clearance and detection, and hybrid challenges. With the recent launch of a new call for applications, NATOs Science for Peace and Security Programme has opened the opportunity for scientists in Croatia, as well as other NATO and partner countries to develop proposals for innovative security-related scientific activities. More information about the call can be found on the SPS website.

#### Oviedo Convention proves that European countries will cooperate with conversations on gene editing

Carole Hognestad ##-##-#### [Norwegian to English Translator; Honrs at University of Dundee/Open University; Diploma in Computing Distinction at Næringsakademiet, Skien, Norway; Diploma in Personnel and Recruitment PracticeDistinction College of Further Education, Oxford], “The Oviedo Convention,” https://www.forskningsetikk.no/en/resources/the-research-ethics-library/legal-statutes-and-guidelines/oviedo-convention/ Cut By: m.jam

The Oviedo Convention (Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine) was formulated in 1997 by the Council of Europe. The Convention is the first convention in international law that has a particular focus on protecting the rights of individuals in connection with biomedical treatment and research. The Convention aims to ensure that scientific and medical advances are not at the expense of human rights.

[Read the complete Oviedo Convention at the Council of Europe's website](https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/164)

See also: [Additional Protocol to the Convention on Human Rights and Biomedicine, concerning Biomedical Research](https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/195)

The Convention was signed by Norway in 1997, and was ratified on 13 October 2006. The Council of Europe has adopted several additional protocols to the Oviedo Convention. The most recent additional protocol deals specifically with issues related to genetic testing. This protocol was adopted in Strasbourg on 27 November 2008 and is now awaiting ratification in different countries. Additional protocols are also binding in Norway.

A total of 47 European countries have ratified the Convention and thereby undertaken to adhere to the provisions therein. Five other states outside Europe have also adopted the Convention.  
The Convention covers the rights of research subjects and the duties of researchers. Medical and health research must be based on respect for the participants' dignity and human rights. Consideration for the participants' safety, privacy and welfare must take precedence over the interests of science and society.

Expected benefits for participants and society must be proportionate to potential drawbacks. Research on humans can only be conducted when there are no alternative methods that are equally effective.  
The Convention also sets requirements for the quality of research, which must meet generally accepted criteria for scientific quality and be carried out by qualified personnel.

The Convention consists of 14 chapters and 38 articles. Some chapters are general and deal with the scope and purpose of the Convention. Chapter 2 focuses on consent, both ordinary informed consent and consent when the person does not have the capacity to consent. Chapter 3 deals with privacy and the right to information. Themes related to the human genome can be found in chapter 4. Research is specifically discussed in chapter 5. Chapter 6 of the Convention addresses issues related to organs and tissue taken from a donor for transplantation. Chapter 7 covers the prohibition of financial gain from the human body or parts thereof.

Several chapters of the Ministry of Health and Care Services' report [NOU 2005: 1 God forskning – bedre helse](https://www.regjeringen.no/no/dokumenter/nou-2005-01/id389605/) (Good research - better health) refer to the Convention. The Oviedo Convention is also incorporated into the Act on medical and health research (Helseforskningsloven), which is concerned with research that involves humans, human biological material and personal health data.

#### The Oviedo Convention prevents EU member states from engaging in germline editing

Morial Shah (2019) "Genetic Warfare: Super Humans And The Law," North Carolina Central University Science & Intellectual Property Law Review: Vol. 12 : Iss. 1 , Article 2. Available at: https://archives.law.nccu.edu/siplr/vol12/iss1/2

The Oviedo Convention of the EU has a more definitive answer for our purposes.106 Through Article 13, it specifies that an intervention “seeking to modify the human genome may only be undertaken for preventive, diagnostic or therapeutic purposes and only if its aim is not to introduce any modification in the genome of any descendants.”107 Accordingly, it makes clear that EU member states may not lawfully engage in human enhancement. Nonetheless, since the distinction between therapy and enhancement is open to debate, EU states may enhance their citizens under the guise of therapy. For instance, soldiers or athletes may receive treatment to make them run faster or carry oxygen to better treat “fatigue” or “exhaustion.”

## Inherency

#### US has no specific prohibition on human germline editing and no real capacity for a regulatory framework.

Melanie Hess -2020 A Call for an International Governance Framework for Human Germline Gene Editing 95 Notre Dame Law Review 1369 https://scholarship.law.nd.edu/cgi/viewcontent.cgi?article=4899&context=ndlr

The United States does not have an explicit legal prohibition on human germline editing.78 This is relatively unusual in the international community, where there are official prohibitions on human germline editing in many countries, including ones that allow human embryonic stem cell research.79 That said, germline editing does not exactly have a clear path forward in the current U.S. regulatory and political climate. Current genome-editing protocols and clinical trials in the United States do not have their own regulatory framework and have instead been “absorbed into the preexisting U.S. regulatory framework for gene therapy, whose overview is largely derived from gene transfer studies”80—despite the fact that germline editing, while involving similar technologies and techniques, has vastly different consequences and implications

## Answers to:

### A2 Politics

#### Congress has consistently approved blocks on human gene editing technology – demonstrating their support for a ban.

Walter G. Johnson and Diana M. Bowman April 22, 2022 It’s time for Congress to stop blocking mitochondrial replacement therapy https://www.statnews.com/2022/04/22/congress-allow-mitochondrial-replacement-more-forward/

Lawmakers have done this by including a rider in laws that fund the FDA each year. These [budget bills](https://www.congress.gov/bill/114th-congress/house-bill/2029/text) say that the FDA cannot use any of its funding to review an application to start clinical trials on “a drug or biological product … in research in which a human embryo is intentionally created or modified to include a heritable genetic modification.” The rider was [initially added](https://jamanetwork.com/journals/jama/fullarticle/2601488) in 2015, but there was no public discussion at the time about the effects the rider would have on mitochondrial replacement. While the rider was likely originally intended to block gene editing of the nuclear DNA with tools like CRISPR, the [FDA has interpreted](https://www.nature.com/articles/s41591-019-0477-4) the ban to apply to mitochondrial replacement as well, even though no nuclear DNA is edited.

#### Congress clearly supports functional bans on human germline genetic engineering.

Britta C van Beers Author Notes Rewriting the human genome, rewriting human rights law? Human rights, human dignity, and human germline modification in the CRISPR era Published: 09 June 2020 Journal of Law and the Biosciences, Volume 7, Issue 1, January-June 2020, lsaa006, https://doi.org/10.1093/jlb/lsaa006

Also in the USA, the most prolific country with regard to basic genome editing research,[41](javascript:;) several legal limits to HGGE are in place. These limits are part of what has been called ‘a complex regulatory and statutory web concerned with human embryo research in general and human germline modification in particular.’[42](javascript:;) Although HGGE is not formally prohibited, currently several mechanisms, taken together, practically impede the clinical introduction of this technology. First, the National Institutes of Health, which is responsible for research funding in the USA, has stated that it ‘will not fund any use of gene-editing technologies in human embryos’.[43](javascript:;) Second, the US Food and Drug Administration, which has the authority to regulate products and drugs involving gene editing, including human gene editing, has so far stood in the way of using HGGE for reproductive purposes and is also not likely to change its policy in the near future. Since December 2015, US Congress has regularly added an amendment to the FDA’s funding bill, a so-called ‘bill rider’, making it impossible for the FDA to consider any application which involves ‘research in which a human embryo is intentionally created or modified to include a heritable genetic modification’.[44](javascript:;) Without the FDA’s approval, implantation of a genetically modified human embryo is illegal in the USA. However, genetically modifying human embryos for research purposes are permitted, even though such experiments remain ineligible for public funding.[45](javascript:;)

#### Congress supports scientific challenges to germline genetic engineering

BY REP. BILL FOSTER, PH.D. (D-ILL.) - 07/09/15 8:00 AM ET Last scientist in Congress warns on human genetic engineering https://thehill.com/blogs/congress-blog/technology/247221-last-scientist-in-congress-warns-on-human-genetic-engineering/

It is rare that prominent members of the scientific community come together to warn our leaders of technological breakthroughs that our legal system and society are not prepared for. As the last Ph.D. scientist remaining in Congress, I feel a responsibility to transmit those concerns to my colleagues and to the public. The breakthrough in question relates to human genetic engineering. This has long been a theoretical possibility assumed to be decades away from practicality. In the last several years this has changed significantly, due to recent breakthroughs that allow inexpensive and precise editing of chromosomal DNA. The technological potential has been amplified by the widespread adoption of in vitro fertilization, the rapid decline in the cost of genome sequencing, increasing use of Big Data to understand the relationship between genetic variations and behavior, as well as the rapid spread of these technologies throughout the world. It’s time for leaders in government to take notice. The ability to modify DNA has been around for decades, but until recently it was expensive, time consuming, and required a very high level of technical skill. That has changed significantly in the last few years with the development of new gene editing tools such as CRISPR/Cas9, introduced by Dr. Jennifer Doudna and others. These tools have been rapidly adopted by researchers around the world. These tools are revolutionary because they enable any researcher with basic capabilities in molecular biology to edit genomes. Therein lies the promise and the danger. Anyone with $300 and Internet access can now buy their own CRISPR kit to begin primitive genome editing of plants and animals. It works like an old-fashioned film reel, where a director can cut apart a film, take frames out, and fill them in with something new. Already, this tool is in daily use in laboratories around the world, editing DNA to produce genetically customized versions of organisms from cell cultures to insects, plants, mice, and monkeys. There is the possibility of great benefit from these new technologies. Animal models with specific genetic variations are being created to greatly accelerate research to determine the links between genetics and disease. In agriculture, it has the potential to vastly accelerate our ability to develop more productive crops, better biofuels, and favorable animal characteristics like high growth rates and stronger immune systems to reduce the need for antibiotics. However, environmental risks are also amplified. Yet what really makes this tool revolutionary is what it could mean for humans. Many of the potential applications of this technology are likely to be non-controversial: for example, replacing the bone marrow of someone suffering from a sickle-cell disease with a modified version of their own marrow, but with the genetic defect removed. Genetic modifications of this kind will only carry risks to a single person and not affect future generations. However, if genetic modifications are made to “germline” cells – sperm, eggs, and embryos – these modifications will also be carried forward to future generations. This will fundamentally change the course of human evolution, and is something that ethicists have been concerned about for decades. Although none of these tools have yet demonstrated the reliability necessary for safe clinical modification of the human germline, the rate of technological progress is such that it is prudent to begin thinking through the implications. Many in the scientific community believe there are critical ethical, legal, and safety questions that must be answered before this research advances. Earlier this year, many of the most respected scientists in the field published a letter calling for a moratorium on human germline modification for clinical applications, warning that “there is an urgent need for open discussion of the merits and risks of human genome modification.”

#### Congress refuses to support funding for clinical applications of human germline gene editing.

Tanya Lewis Dec 16, 2015, 1:45 PM Congress just put a massive roadblock in the way of genetically editing human embryos https://www.businessinsider.com/congress-bans-funding-for-embryo-gene-editing-2015-12

Congressional Republicans proposed a spending deal late Tuesday night to fund the government through 2016, and it places new restrictions on the use of federal funding for gene editing, Politico reported. The House and Senate are expected to pass the legislation soon. Obama will have to sign the bill or face the prospect of a government shut down. The $1.1 trillion Omnibus Spending Bill contains a provision that outlaws the use of federal money for research that involves genetically modifying human embryos, a topic of intense debate. The technology in question, known as CRISPR/Cas9, allows scientists to precisely and easily tweak the genomes of any organism. It has already been used by Chinese scientists to modify human embryos, though not ones that were capable of surviving until birth. Specifically, the bill specifies that none of the funding be used for clinical research "in which a human embryo is intentionally created or modified to include a heritable genetic modification."

### A2 Business confidence / Innovation

#### – still can use CRISPR for other editing and advances.

Gregory E. Kaebnick is a research scholar at The Hastings Center and the editor of theHastings Center Report. A Moratorium on Gene Editing? March 27 2015 https://www.thehastingscenter.org/a-moratorium-on-gene-editing/

CRISPR/Cas9 can be turned to many other uses than editing the human germline, however. One of the most extraordinary is the possibility of using it in “gene drives” that could be make genetic modifications to sexually reproducing populations of microorganisms, animals, or plants. Sexually reproducing organisms have two sets of gene—one from each parent. A gene drive is a set of genes that, if it is inserted into one set, will get itself copied to the appropriate location on the other set, replacing any competing genes and also ensuring that all of the organism’s offspring receive the drive. Within those offspring, the drive will again replace any competing genes, ensuring that all of the next generation receives the gene. If a species reproduces rapidly, it might be possible to quickly alter the whole species. Mosquitoes could be altered so that they can no longer transmit malaria or dengue, for example.

#### – no link- ban doesn’t apply to research uses or somatic editing.

Lander, et.al. 2019 Eric S. Lander , Françoise Baylis , Feng Zhang , Emmanuelle Charpentier , Paul Berg , Catherine Bourgain , Bärbel Friedrich , J. Keith Joung , Jinsong Li , David Liu , Luigi Naldini , Jing-Bao Nie , Renzong Qiu , Bettina Schoene-Seifert , Feng Shao , Sharon Terry , Wensheng Wei & Ernst-Ludwig Winnacker 13 March 2019 Adopt a moratorium on heritable genome editing https://www.nature.com/articles/d41586-019-00726-5

To be clear, our proposed moratorium does not apply to germline editing for research uses, provided that these studies do not involve the transfer of an embryo to a person’s uterus. It also does not apply to genome editing in human somatic (non-reproductive) cells to treat diseases, for which patients can provide informed consent and the DNA modifications are not heritable.

### A2 Disease Turn

#### No medical necessity for human germline gene editing. Oppenheimer has persuasively discredited the negs conception of risk for medical benefit – its at our peril we allow the legitimate possibility of human destruction.

Hurlbut, J.B. (2020).the author of Experiments in Democracy: Human Embryo Research and the Politics of Bioethics (Columbia University Press, 2017) and co-editor of Perfecting Human Futures: Transhuman Visions and Technological Imaginations, (Dordrecht: Springer, 2016), as well as numerous articles and book chapters. He holds an A.B. from Stanford University and a Ph.D. in the History of Science from Harvard University. He was a postdoctoral fellow in the program on Science, Technology and Society at the Harvard Kennedy School. Imperatives of Governance: Human Genome Editing and the Problem of Progress. *Perspectives in Biology and Medicine* *63*(1), 177-194. [doi:10.1353/pbm.2020.0013](http://doi.org/10.1353/pbm.2020.0013). /nfs

The project of “consciously perfecting” human life begins with the misguided but well-meaning step of seeking to repair human beings that have been marked as lessor, inferior, or defective. For He’s would-be parents, the defect lay not in their future children’s DNA, but in a society that sorts, classifies, and seek to correct—or discard—those who do not measure up. No society is free of such defects. Yet acquiescing to them—editing children to compensate for the deficiencies of the societies into which they will be born—will amount to nothing less than affirming those deficiencies. Developing and deploying HGGE in the name of some unjustifiable notion of “medical necessity” amounts to setting this technology free to be used for genetic fixes for social problems—“cur[ing] prejudice”—of whatever sort the market will sustain. And the market that He imagined is vast. Liberating the technology in this way would deny the vast majority of the human community the freedom to ask whether we want it at all. If there is even a small possibility that developing heritable human genome editing could contribute to such a future (and as the He case makes clear, that possibility is far from remote), humanity has a duty to carefully contend with the question of how to guide and govern this technology. This entails asking not only what should be done, but how we should understand what is at stake: what questions need to be asked but are going unasked, how the terms of debate are being set, by whom, and with what consequences for which cultural, J. Benjamin Hurlbut 192 Perspectives in Biology and Medicine moral, and spiritual vocabularies can contribute to steering the ship. And yet the imperatives of governance that have guided debate thus far have taken us far off course. Unless we correct, the ways of thinking and speaking that this essay has examined will continue to drive the direction of technology—encouraging and justifying irresponsible science, sidelining serious ethical reflection, constraining democratic governance, and inhibiting deliberation that draws upon the wealth of tradition, experience and moral imagination. As we navigate into the uncharted waters of our technological future, we would do well to recall, with restraint and humility, that we are an imperfect species. The aspiration to heal the infirmities of our mortal lives, no matter how virtuous, is endlessly vulnerable to that all-too-human impulse to redeem ourselves though mastery of nature and self. It is but a short step from the desire to repair what is imperfect to the impulse to perfect. And one need not look long to see that the will to perfectibility is also a will to power— to render fragile and vulnerable human life an object of manipulation and control. Beneath a hunger for prestige and a belief in the virtue and righteousness of his project, He Jiankui was also driven by the thrill of it: the reckless speed, the heroic transgression, the wielding of an unprecedented and seemingly righteous power over the fragility of human life. So too were his aiders and abettors, members of a guild that wields ever-increasing powers over life. They encouraged He not in the name of healing the sick, but in the name of an imagined right—and righteousness—of radical scientific freedom to ordain the lives we shall have and the purposes for which we shall live. J. Robert Oppenheimer described this ethos more than half a century ago: “When you see something that is technically sweet, you go ahead and do it, and you argue about what to do about it only after you have had your technical success” (US Atomic Energy Commission 1954). The sweet successes of the nuclear age threatened to extinguish civilization itself. Biology’s emerging powers over the stuff of life, though far more subtle, are no less threatening to human integrity. It is at our peril that we the people cede the authority to guide and govern our common future to those who would mistake the sweetness of their own success for progress

#### Other successful ways to deal with genetic diseases besides germline editing

[Annie Sneed](https://www.scientificamerican.com/author/annie-sneed/) on April 15, 2019 Environmental Thinker Bill McKibben Sounds Warning on Technology https://www.scientificamerican.com/article/environmental-thinker-bill-mckibben-sounds-warning-on-technology/

I truthfully don't think that human genetic engineering offers us much in the way of benefit. If people are worried about genetic disease, we can already deal with that through preimplantation genetic diagnosis, which is used in fertility clinics around the world. It lets you make sure your child doesn't have a genetic disease, but it doesn't let you improve your child. So I don't think the benefits [of human germline genetic engineering] are very high, and the potential cost—in terms of meaning—is enormous.

The “medical necessity” argument is a farce – the cases are vanishingly rare

Hurlbut, J.B. (2020).the author of Experiments in Democracy: Human Embryo Research and the Politics of Bioethics (Columbia University Press, 2017) and co-editor of Perfecting Human Futures: Transhuman Visions and Technological Imaginations, (Dordrecht: Springer, 2016), as well as numerous articles and book chapters. He holds an A.B. from Stanford University and a Ph.D. in the History of Science from Harvard University. He was a postdoctoral fellow in the program on Science, Technology and Society at the Harvard Kennedy School. Imperatives of Governance: Human Genome Editing and the Problem of Progress. *Perspectives in Biology and Medicine* *63*(1), 177-194. [doi:10.1353/pbm.2020.0013](http://doi.org/10.1353/pbm.2020.0013). /nfs

And yet, for all the summits, advisory reports, and deliberations, there has been remarkably little direct engagement with what strikes me as the most fundamental question of governance: What is this technology for? This question has mostly been approached as a challenge to come up with scenarios in which embryo editing is “medically necessary” because it is the only means through which someone could have a healthy, genetically related child. Such cases are vanishingly rare. The Nuffield Council (2018) consulted with a number of genetic counselors, who reported never having encountered such a case in what amounted to hundreds of years of combined clinical experience. Yet regardless of how vanishingly rare candidate cases may be, searching for them amounts to a search for justification, not an inquiry into the technology’s purpose. The designer’s intentions do not determine what a technology is for — that is, the reasons it will be used and the uses it will be put to. To understand what a technology is for one must inquire into the ways it is likely to be incorporated into people’s lives and societies, looking to the ends it might be made to serve, and the senses of desire, obligation, or need that usher it in. Once again, the He case offers insight—and a powerful warning.

#### We can’t identify correct genetic changes to make – regardless of advances in CRISPR technology.

Gregory E. Kaebnick is a research scholar at The Hastings Center and the editor of theHastings Center Report. A Moratorium on Gene Editing? March 27 2015 https://www.thehastingscenter.org/a-moratorium-on-gene-editing/

The second problem – identifying the correct genetic changes – is the real issue, though, and CRISPR/Cas9 doesn’t even address this problem. In fact, no gene editing tool can solve the second problem, any more than a word processing tool can by itself solve the problem of how to write the next great American novel. To identify the “correct” genetic changes, we need to understand what the targeted gene does, but also how it interacts with other genes, and also how the genome interacts with environments. We’re not there. As David Baltimore, a Nobel laureate and a member of one of the groups calling for a moratorium, told the Times,“I personally think we are just not smart enough — and won’t be for a very long time — to feel comfortable about the consequences.” This is the second and bigger reason that the moratorium is a good idea.

### A2 Germline Leadership Turn

#### Plan allows NATO to reinvent itself in ways that act as a liberal bulwark against Russia and China

Henrik Larsen Sunday, May 22, 2022, 10:01 AM NATO Must Get Resilience Right to Withstand Russia and China https://www.lawfareblog.com/nato-must-get-resilience-right-withstand-russia-and-china

NATO is at arguably the most important juncture in its post-Cold War history. NATO must adapt not only its military preparedness but also its approach to the nonmilitary—and specifically illiberal—challenges that Russia and China pose to its resilience and cohesion. To advance their geopolitical interests, Russia and China exploited the openness of society in NATO allies and the divisions between them over the past decade. NATO must always be wary of external challenges that could undermine its unity. This was true during the Cold War in the face of an ideological rival seeking to undermine confidence in Western democratic governments, and it remains true in the face of Russia and China today. Conversely, NATO needs to navigate its adaptation to its illiberal challenge while avoiding functional over-extension. The alliance is at [risk of maladaptation](https://www.tandfonline.com/doi/full/10.1080/09662839.2020.1799786), whereby it extends its own activities unnecessarily into civilian areas of security in which it lacks necessary expertise and legacy. Strong voices in the [expert](https://www.sciencedirect.com/science/article/pii/S0030438721000648) [community](https://www.atlanticcouncil.org/content-series/nato20-2020/build-resilience-for-an-era-of-shocks/) [call](https://www.gmfus.org/news/tag-nato-shadow-strategic-concept-2022-preserving-peace-protecting-people) for NATO to specify resilience as a core task in the forthcoming Strategic Concept, in principle elevating it to a task of equal importance to collective defense. An [influential report](https://www.nato.int/nato_static_fl2014/assets/pdf/2020/12/pdf/201201-Reflection-Group-Final-Report-Uni.pdf) commissioned by Secretary-General Jens Stoltenberg to inspire the Strategic Concept recommends that NATO reinvent itself as a “liberal bulwark” against Russia and China and extend the alliance’s responsibilities into the realm of democratic resilience.

#### US affirmation of shared NATO principles is an historic opportunity to develop a cohesive relationship on multiple issues – including emerging tech, climate change, and China.

Simona R. Soare Biden’s Security Policy: Democratic Security or Democratic Exceptionalism? Volume 56, 2021 · Number 1 · pp. 14–20 https://www.intereconomics.eu/contents/year/2021/number/1/article/biden-s-security-policy-democratic-security-or-democratic-exceptionalism.html

The first pillar is to regain trust and reaffirm the unbreakable security and defence ties within NATO. The reason behind this is strategic - the Biden administration correctly regards the North Atlantic alliance as a key tool in confronting and containing aggressive Russian behaviour and Chinese influence. The Alliance is already undergoing a detailed self-reflection process, i.e. NATO 2030, after which Secretary General Stoltenberg will propose that allies develop a new NATO Strategic Concept in early 2021. This represents an opportunity for the US to exercise more prominent NATO leadership right from the start of the new administration. The upcoming 2021 NATO Summit will open diplomatic doors to allow for symbolic gestures of reaffirmation of the American commitment to European security. It will equally be a useful framework for substantive discussions about the future direction of the Alliance on emerging technologies, climate change, China, critical infrastructure protection as well as how to deal with difficult allies that transgress on democratic principles. In this context, the Biden administration could drive a new stage of NATO adaptation beginning in 2021: 'œAs president, I will do more than just restore our historic partnerships; I will lead the effort to reimagine them for the world we face today' (Biden, 2020a).

#### No hegemony impact – empirics and political psychology prove US posture is unrelated to great power peace

Fettweis 17 – Christopher, associate professor of political science at Tulane University. “Unipolarity, Hegemony, and the New Peace”, Security Studies, Vol. 26, No. 3, https://doi.org/10.1080/09636412.2017.1306394, 05-08-2017

Overestimated Benevolence

**Both strains of the** heg**emonic-**stability **explanation assume not only that US power is benevolent, but that others perceive it that way.** **Hegemonic stability depends on the perceptions of other states to be successful; it has no hope to succeed if it encounters resistance from the less powerful members of the system, or even if they simply refuse to follow the rules**. Relatively small police forces require the general cooperation of large communities to have any chance of establishing order. They must perceive the sheriff as just, rational, and essentially nonthreatening. The lack of balancing behavior in the system, which has been puzzling to many realists, seems to support the notion of widespread perceptions of benevolent hegemony.101 Were they threatened by the order constructed by the United States, the argument goes, smaller states would react in ways that reflected their fears. Since internal and external balancing accompanied previous attempts to achieve hegemony, the absence of such behavior today suggests that something is different about the US version.

**Hegemonic-stability theorists purport to understand the perceptions of others, at times better than those others understand themselves**. Complain as they may at times, other countries know that the United States is acting in the common interest. Objections to unipolarity, though widespread, are not “very seriously intended,” wrote Kagan, since “the truth about America’s dominant role in the world is known to most observers. And the truth is that the benevolent hegemony exercised by the United States is good for a vast portion of the world’s population.” 102 **In the 1990s, Russian protests regarding NATO expansion—though nearly universal—were not taken seriously, since US planners believed the alliance’s benevolent intentions were apparent to all.** Sagacious Russians understood that expansion would actually be beneficial, since it would bring stability to their western border.103 **President Clinton and Secretary of State Warren Christopher were caught off guard by the hostility of their counterparts regarding the issue at a summit in Budapest in December 1994**.104 **Despite warnings from the vast majority of academic and policy experts about the likely Russian reaction and overall wisdom of expansion itself, the administration failed to anticipate Moscow’s position.**105 The Russians did not seem to believe American assurances that expansion would actually be good for them. The United States overestimated the degree to which others saw it as benevolent.

**Once again, the culture of the United States might make its leaders more vulnerable to this misperception. The need for positive self-regard appears to be particularly strong in North American societies** compared to elsewhere.106 Western egos tend to be gratified through self-promotion rather than humility, and independence rather than interdependence. Americans are more likely to feel good if they are unique rather than a good cog in society’s wheel, and uniquely good. The need to be perceived as benevolent, though universal, may well exert stronger encouragement for US observers to project their perceptions onto others.

**The United States almost certainly frightens others more than its leaders perceive**. **A quarter of the 68,000 respondents to a 2013 Gallup poll in sixty-five countries identified the United States as the “greatest threat to world peace,” which was more than three times the total for the second-place country** (Pakistan).107 **The international community always has to worry about the potential for police brutality, even if it occurs rarely**. Such ungratefulness tends to come as a surprise to US leaders. In 2003, Condoleezza Rice was dismayed to discover resistance to US initiatives in Iraq: “There were times,” she said later, “that it appeared that American power was seen to be more dangerous than, perhaps, Saddam Hussein.” 108 Both liberals and neoconservatives probably exaggerate the extent to which US hegemony is everywhere secretly welcomed**; it is not just petulant resentment, but understandable disagreement with US policies, that motivates counterhegemonic beliefs and behavior.**

**To review, assuming for a moment that US leaders are subject to the same forces that affect every human being, they overestimate the amount of control they have over other actors**, **and are not as important to decisions made elsewhere as they believe themselves to be.** And they probably perceive their own benevolence to be much greater than do others. These common phenomena all influence US beliefs in the same direction, and may well increase the apparent explanatory power of hegemony beyond what the facts would otherwise support. The United States is probably not as central to the New Peace as either liberals or neoconservatives believe.

In the end, what can be said about the relationship between US power and international stability? Probably not much that will satisfy partisans, and the pacifying virtue of US hegemony will remain largely an article of faith in some circles in the policy world. Like most beliefs, it will remain immune to alteration by logic and evidence. Beliefs rarely change, so debates rarely end.

For those not yet fully converted, however, **perhaps it will be significant that corroborating evidence for the relationship is extremely hard to identify. If indeed hegemonic stability exists, it does so without leaving much of a trace.** **Neither Washington’s spending**, nor its **interventions, nor** its overall **grand strategy seem to** **matter much to the levels of armed conflict around the world** (apart from those wars that Uncle Sam starts). **The empirical record does not contain strong reasons to believe that unipolarity and the New Peace are related, and insights from political psychology suggest that hegemonic stability is a belief particularly susceptible to misperception**. US leaders probably exaggerate the degree to which their power matters, and could retrench without much risk to themselves or the world around them. **Researchers will need to look elsewhere to explain why the world has entered into the most peaceful period in its history.**

The good news from this is that **the New Peace will** probably **persist** for quite some time, **no matter how dominant the United States is, or what policies President Trump follows**, or how much resentment its actions cause in the periphery. **The people of the twenty-first century are likely to be much safer and more secure than any of their predecessors, even if many of them do not always believe it**

#### The liberal order’s structure makes it resilient.

Ikenberry 18 – G. John, professor of Politics and International Affairs in the Woodrow Wilson School of Public and International Affairs at Princeton University. “Why the Liberal World Order Will Survive”, Carnegie Ethics and International Affairs, pg. 24-25, <https://scholar.princeton.edu/sites/default/files/gji3/files/why_the_liberal_world_order_will_survive.pdf>, 03-xx-2018

**Four characteristics reinforce and draw states into the order**. First, it **has integrative tendencies**. Over the last century states with diverse characteristics have found pathways into its “ecosystem” of rules and institutions. Germany and Japan found roles and positions of authority in the post-war order; and after the cold war many more states—in Eastern Europe, Asia, and elsewhere—have joined its economic and security partnerships. **It is the multilateral logic of the order that makes it** relatively **easy for states to join and rise up within the order**. Second, **the liberal order offers** opportunities for leadership and **shared authority. One state does not “rule” the system. The system is built around institutions**, and **this provides opportunities for shifting and expanding coalitions of states to share leadership**. Formal institutions, such as the IMF and World Bank, are led by boards of directors and weighted voting. Informal groups, such as the G-7 and G-20, are built on principles of collective governance. Third, **the actual economic gains from participation within the liberal order are widely shared**. In colonial and informal imperial systems, the gains from trade and investment are disproportionately enjoyed by the lead state. In the existing order, **the “profits of modernity” are distributed across the system**. Indeed, **China’s great economic ascent was only possible because the liberal international order rewarded its pursuit of openness and trade-oriented growth**. For the same reason, states in all regions of the world have made systematic efforts to integrate into the system. Finally, **the liberal international order accommodates a diversity of models and strategies of growth and development**. In recent decades the Anglo-American model of neoliberalism has been particularly salient. But the post-war system also provides space for other capitalist models, such as those associated with European social democracy and East Asian developmental statism. The global capitalist system might generate some pressures for convergence, but it also provides space for the coexistence of alternative models and ideologies.

**These aspects of the liberal international order create incentives and opportunities for states to integrate into its core economic and political realms**. The order allows states to share in its economic spoils. **Its pluralistic character creates possibilities for states to “work the system”**—to join in, negotiate, and maneuver in ways that advance their interests. **This**, in turn, **creates an order with expanding constituencies that have a stake in its continuation**. Compared to imperial and colonial orders of the past, **the existing order is easy to join and hard to overturn**.

#### Rising states want to preserve it.

Ikenberry 18 – G. John, professor of Politics and International Affairs in the Woodrow Wilson School of Public and International Affairs at Princeton University. “Why the Liberal World Order Will Survive”, Carnegie Ethics and International Affairs, pg. 25-26, <https://scholar.princeton.edu/sites/default/files/gji3/files/why_the_liberal_world_order_will_survive.pdf>, 03-xx-2018

What Rising States Want **The** liberal international **order was built by the Western** liberal **democracies, but its** basic **features do not exclusively advance** the interests of **these countries**. In fact, as **China and** other **non-Western developing states rise**, they have **already demonstrated** **a growing interest in the perpetuation of** some sort of **open and multilateral global system. These countries** may not want Western dominance of global institutions, but they **want the West’s rules and organizational principles.**

These rising states certainly want **an open world economy**. They want access to other countries for **trade, investment, and technology. It is their outward-oriented development strategies that** **have propelled them forward**. The ascent of these countries began in the late 1980s with broad-gauged reform efforts. Countries why the liberal world order will survive such as Brazil, India, Indonesia, South Africa, and Turkey broke with their closed, authoritarian pasts and moved toward more reform-oriented and accountable governments. Together with China, these countries opened up to the world economy. As Ted Piccone argues, they all “entered the global marketplace through an increasing reliance on international trade, migration, remittances, energy, and foreign investment flows.” This liberalization and economic openness has come along with a mix of nationalist and populist appeals, and ideological critiques of Western neoliberalism. More generally, however, these **rising states see** their **prospects for growth and advancement** to be **tied to engagement with** **and** **integration into** **a reformed and open world economy**.

The **rising** non-Western **states** also **have** an **interest in the** preservation—and perhaps the **expansion**—**of a rules-based international system. A multilateral system** of rules and institutions **offers rising states** some measure of protection and **equal treatment**. As John Ruggie argues, multilateralism is an “institutional form that coordinates relations among three or more states on the basis of generalized principles of conduct: that is, principles which specify appropriate conduct for a class of actions.” Multilateralism gives relations among states a rule-based character. **The more rule-based** the order is, **the less** it is subject to the straightforward **domination of powerful states. This** sort of system of governance **should be attractive to** weak and **peripheral states**. So, too, **as rising states gain** in **wealth** **and standing, they** will **want a rule-based system** to protect their gains. **One fear of these states is** that **they will face discrimination and marginalization**. In the trade area, for example, **the W**orld **T**rade **O**rganization **is attractive to rising states because of its multilateral principle of equal and most-favored nation treatment**.

For these reasons, **rising states have incentives to be stakeholders** in some sort of updated and reformed liberal international order. As Miles Kahler argues, **Brazil, China, and India have shown themselves to be the “conservative globalizers.”** None is directly allied with the United States, yet **each** has **made “large bets on opening its economy and breaking with a more autocratic past”;** and along the way their **“populations** have **endorsed** the benefits of trade and foreign investment, providing **a political base for** this turn to **the global economy.”** Rising states want predictable and fair-minded access to and treatment within an open global system. They resist the political domination of existing global institutions by Western powers. But **the remedy** for this problem **is** actually the **deepening** of **the foundations of an open and rule-based order, not its destruction.**

### A2 Regulation CP

#### \*Also can read cards in the bans solve section

#### Restrictions fail – has to be a ban – risk is too much and collapses autonomy

Roberto Andorno 2022 Human Dignity, Life Sciences Technologies and the Renewed Imperative to Preserve Human Freedom https://www.researchgate.net/profile/Roberto-Andorno/publication/360729946\_Human\_Dignity\_Life\_Sciences\_Technologies\_and\_the\_Renewed\_Imperative\_to\_Preserve\_Human\_Freedom/links/628cecf0d4e5243d9b9624f7/Human-Dignity-Life-Sciences-Technologies-and-the-Renewed-Imperative-to-Preserve-Human-Freedom.pdf

In his book The Future of Human Nature, Jürgen Habermas makes the case that the use of germline genetic engineering would give us an exorbitant power over our descendants and lead to a dramatic loss of liberty for future generations. In his view, preventing the manipulation of the genome of our descendants “is crucial for our capacity to see ourselves as the authors of our own life history, and to recognize us as autonomous persons.” 47 He claims that the principle of equality between generations crucially depends on the condition that each individual’s features are more to the result of chance than choice, of contingency rather than human design. Certainly, it can be argued, as is often done, that the germline alterations will only aim at preventing the transmission of genetically related diseases. The problem is that, even if this were the initial focus, the risk is too high that we will then gradually start to make genetic changes for the non-therapeutic design of children.48 Even the best-intentioned efforts to restrict the use of the technique to specified conditions would be unlikely to hold, for a number of reasons that cannot be discussed here.49 Besides that, it is well-known that the boundaries between “therapy” and “enhancement” are extremely difficult to define in real practice. Moreover, the expression “therapeutic purpose” is itself somehow misleading in this context. Germline gene editing does not aim to treat, cure, or prevent diseases in any existing patient. Instead, it aims to modify the genes of future children and generations through the intentional creation of embryos with altered genomes. Strictly speaking, the procedure is not a medical intervention but a way to satisfy parental desires for genetically related children or for children with specific genetic traits.50 In other words, we are not dealing with a therapeutic procedure but with a wish-fulfilling technology, which is something very different from an ethical and legal point of view. It must be noted that germline engineering is radically different from other technologies in the sense that it does not aim to change the tools that we use but the users themselves (that is, ourselves, or rather, our descendants), and in an irreversible manner. Some reports from scientific academies have argued that the procedure could become acceptable once the risks of side effects on the children can be reduced to a minimum.51 However, besides the fact that the concerns raised by the technique exceed by far the question of the purely medical side effects, can a risk that may unpredictably affect future people –either physically or psychologically – ever be regarded as “minimal”? Is the classic risk–benefit analysis really applicable to this radically new scenario? These questions are difficult to answer. What is clear is that humankind has rarely been confronted with such challenging issues concerning our self-understanding as free, non-engineered human beings, and the long-term effects of our technological choices.

Regulations cannot resolve the ethical issues – no responsible path forward unless a ban.

ASAN, 10-8-2019, "ASAN Comments on the Clinical Use of Human Germline Genome Editing", Autistic Self Advocacy Network, https://autisticadvocacy.org/2019/10/asan-comments-on-the-clinical-use-of-human-germline-genome-editing/, 6-27-2022, //ms

There is no responsible path forward for the use of germline genome editing at all. The procedure has potentially racist and strikingly ableist implications which would negatively impact the long-term future of the international disability rights community. As such, no international oversight structures could make any path forward for germline genome editing ethical or responsible. Additionally, it is quite unlikely that an international oversight structure would be fully able to govern germline genome editing. For example, although the United Nations or another international body could develop a Convention on the Ethical Use of Germline Genome Editing, countries could simply choose not to sign and/or ratify the Convention. Even if we assume that all interested countries signed and ratified such a document, international standards, even when binding, can remain unenforced. For example, although a great many countries have signed and ratified the Convention on the Rights of People with Disabilities, very few of these countries have made substantial progress towards enforcing Article 12 of the Convention, which requires that States Parties take “appropriate measures to provide access by persons with disabilities to the support they may require in exercising their legal capacity.”[7](https://autisticadvocacy.org/2019/10/asan-comments-on-the-clinical-use-of-human-germline-genome-editing/#f+6187+1+7) Some individual countries are also quite likely to interpret any international governing standards such as to allow whatever action they take, regardless of whether the standards actually do so. Regardless of the presence or absence of international standards, individual organizations or persons will exist who defy them, who will face little accountability. [8](https://autisticadvocacy.org/2019/10/asan-comments-on-the-clinical-use-of-human-germline-genome-editing/#f+6187+1+8)