## 1

#### I value morality

#### The standard is maximizing well-being, specifically act hedonism

#### 1] Pleasure and pain are constitutive

#### A]

Moen 15 (Moen, Martin, An argument for Hedonism, 15 //chskk)

The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. If you tell me that you are heading for the convenience store, I might ask: ‘‘What for?’’ This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. You might answer, for example: ‘‘To buy soda.’’ This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: ‘‘What is buying the soda good for?’’ This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: ‘‘Well, I want it for the pleasure of drinking it.’’ If I then proceed by asking ‘‘But what is the pleasure of drinking the soda good for?’’ the discussion is likely to reach an awkward end. The reason is that the pleasure is not good for anything further; it is simply that for which going to the convenience store and buying the soda is good.3 As Aristotle observes: ‘‘We never ask [a man] what his end is in being pleased, because we assume that pleasure is choice worthy in itself.’’4 Presumably, a similar story can be told in the case of pains, for if someone says ‘‘This is painful!’’ we never respond by asking: ‘‘And why is that a problem?’’ We take for granted that if something is painful, we have a sufficient explanation of why it is bad.

#### B] All other reasoning is circular; things are good or bad because they evoke pleasure or pain

#### 2] Extinction first

#### A]

#### Extinction is the worst impact under any framing: irreversibility, future generations, and moral uncertainty

MacAskill 14 (MacAskill, William, Oxford Philosopher and youngest tenured philosopher in the world, Normative Uncertainty, 2014//chskk)

The human race might go extinct from a number of causes: asteroids, supervolcanoes, runaway climate change, pandemics, nuclear war, and the development and use of dangerous new technologies such as synthetic biology, all pose risks (even if very small) to the continued survival of the human race.184 And different moral views give opposing answers to question of whether this would be a good or a bad thing. It might seem obvious that human extinction would be a very bad thing, both because of the loss of potential future lives, and because of the loss of the scientific and artistic progress that we would make in the future. But the issue is at least unclear. The continuation of the human race would be a mixed bag: inevitably, it would involve both upsides and downsides. And if one regards it as much more important to avoid bad things happening than to promote good things happening then one could plausibly regard human extinction as a good thing.For example, one might regard the prevention of bads as being in general more important that the promotion of goods, as defended historically by G. E. Moore,185 and more recently by Thomas Hurka.186 One could weigh the prevention of suffering as being much more important that the promotion of happiness. Or one could weight the prevention of objective bads, such as war and genocide, as being much more important than the promotion of objective goods, such as scientific and artistic progress. If the human race continues its future will inevitably involve suffering as well as happiness, and objective bads as well as objective goods. So, if one weights the bads sufficiently heavily against the goods, or if one is sufficiently pessimistic about humanity’s ability to achieve good outcomes, then one will regard human extinction as a good thing.187 However, even if we believe in a moral view according to which human extinction would be a good thing, we still have strong reason to prevent near-term human extinction. To see this, we must note three points. First, we should note that the extinction of the human race is an extremely high stakes moral issue. Humanity could be around for a very long time: if humans survive as long as the median mammal species, we will last another two million years. On this estimate, the number of humans in existence in the The future, given that we don’t go extinct any time soon, would be 2×10^14. So if it is good to bring new people into existence, then it’s very good to prevent human extinction. Second, human extinction is by its nature an irreversible scenario. If we continue to exist, then we always have the option of letting ourselves go extinct in the future (or, perhaps more realistically, of considerably reducing population size). But if we go extinct, then we can’t magically bring ourselves back into existence at a later date. Third, we should expect ourselves to progress, morally, over the next few centuries, as we have progressed in the past. So we should expect that in a few centuries’ time we will have better evidence about how to evaluate human extinction than we currently have. Given these three factors, it would be better to prevent the near-term extinction of the human race, even if we thought that the extinction of the human race would actually be a very good thing. To make this concrete, I’ll give the following simple but illustrative model. Suppose that we have 0.8 credence that it is a bad thing to produce new people, and 0.2 certain that it’s a good thing to produce new people; and the degree to which it is good to produce new people, if it is good, is the same as the degree to which it is bad to produce new people, if it is bad. That is, I’m supposing, for simplicity, that we know that one new life has one unit of value; we just don’t know whether that unit is positive or negative. And let’s use our estimate of 2×10^14 people who would exist in the future, if we avoid near-term human extinction. Given our stipulated credences, the expected benefit of letting the human race go extinct now would be (.8-.2)×(2×10^14) = 1.2×(10^14). Suppose that, if we let the human race continue and did research for 300 years, we would [to] know for certain whether or not additional people are of positive or negative value. If so, then with the credences above we should think it 80% likely that we will find out that it is a bad thing to produce new people, and 20% likely that we will find out that it’s a good thing to produce new people. So there’s an 80% chance of a loss of 3×(10^10) (because of the delay of letting the human race go extinct), the expected value of which is 2.4×(10^10). But there’s also a 20% chance of a gain of 2×(10^14), the expected value of which is 4×(10^13). That is, in expected value terms, the cost of waiting for a few hundred years is vanishingly small compared with the benefit of keeping one’s options open while one gains new information.

#### B] Math: Regardless of probability, extinction o/w; 1% of infinity is still infinity

#### 3] Actor Specificity

#### A] Policymakers only know aggregations and therefore can’t morally deliberate without being infinitely regressive

#### B] Other frameworks can’t be used to determine if the rez is moral if they are impossible to implement

#### 4] TJF’s

#### A] Frameworks must be theoretically justified because it leads to out of round terminal impacts like education

#### B] TJF’s come first because they’re a meta-constraint on your ability to run your framework

#### C] Accessibility: Util is accessible to novices because they’re familiar with consequential moral calculus- o/w on education because more people doing debate the more people gain education

#### D] Topic Research: Lit base grounded in empirics allows for wider ground and more clash which is key to education

#### 5] Lexical Prerequisite: A subject must be alive in order to engage in ethics- bodily security is a prior question to ethical theories

#### 6] Indicts don’t link

#### A] Aggregation works- that’s what impact calc is for, it’s a matter of weighing

#### B] Stemming consequences is false- we can calculate events in terms of experimental or theoretical probability- we can calculate 2+2 with 100% certainty

#### C] Induction works- We can predict the future based on the past with certainty

## 2

#### CP Text: States, except the United States, should ban the appropriation of outer space by private entities. The United States should fund the appropriation of outer space for the mining of rare earth metals from asteroids by private entities.

#### Asteroids contain rare earth metals and mining is feasible

US Nuclear Corp 21 (“Mining a $10,000 Quadrillion Asteroid.” AP NEWS, Associated Press, 1 Feb. 2021, https://apnews.com/press-release/accesswire/technology-business-science-utilities-electric-utilities-7bb32ecaac33bebef6e4b97ade588c57.//chskk)

LOS ANGELES, CA / ACCESSWIRE / February 1, 2021 / Bob Goldstein, CEO of US Nuclear Corp (UCLE:OTCQB) weighs in on asteroid mining, “Mining of rare and valuable metals from the asteroids has long been fantasized, but then disregarded as something that is in the distant future. However, recent breakthroughs in fusion energy could lead to a new generation of faster, more powerful spacecraft propulsion systems, precisely for the purpose of asteroid mining expeditions.” The mining of asteroids has long been viewed as a vast source of wealth consisting of rare earth elements and precious metals. The short supply and high prices for these minerals have put us at odds with other countries, disrupting the supply chain of phones, computers, electric cars, and slowing our economic growth. In fact, terrestrial reserves on Earth could be exhausted within the next few decades. Back on December 5, 2020, a metallic asteroid 140 miles wide and worth an estimated $10,000 quadrillion in value made its closest approach to our planet. With NASA and other companies investing in and developing nuclear power for use in space travel and colonization, the reality of mining asteroids is closer than ever before. There are several million asteroids. They fall into three main types: carbonaceous asteroids, metallic asteroids, and mixed salicaceous-mineral-metallic asteroids. Many of the metallic asteroids are composed mainly of nickel and iron, but also contain sizeable quantities of important rare earth elements and precious metals including platinum and gold. A metallic asteroid just 25 meters across could contain as much as 30 tons of platinum valued around $1 billion. 16 Psyche is a staggering 226 kilometers (140 miles) wide and the most mineral rich asteroid so far detected. It is speculated that 16 Psyche could be worth about $10,000 quadrillion (or €8,240 quadrillion euros). To explore 16 Psyche in greater detail, NASA has approved the Psyche mission, which is scheduled to launch in August 2022. The spacecraft will orbit around 16 Psyche for 21 months while studying the asteroid using a number of different scientific instruments. Twenty four percent of all asteroids are thought to be composed of metals and rare minerals. While it is quite difficult to analyze asteroid composition from here on the earth’s surface, there are another 10 asteroids have been identified as likely cost-effective mining targets to date. There are hurdles to overcome when it comes to mining an asteroid, such as: financial feasibility (space ventures are high-risk, long-term, heavy capital investments), building the infrastructure required to mine and process the asteroid, and transportation to/from the asteroid or even transporting the asteroid itself to a safe orbit around the Moon or Earth. However, with US government, private, and public companies alike committed to developing nuclear power and propulsion systems for space travel and colonization, and it is only a matter of time before we start mining asteroids to cover our depleting terrestrial reserves and enable human expansion into the solar system. With proven successful fusion energy experiments under their belt, US Nuclear and MIFTI believe they are only a few years away from building the world’s first fusion power generator. Fusion power releases up to four times as much energy as fission, and uses fuel that is lightweight, low-cost, safe, and sustainable. Spacecraft with fusion powered propulsion systems could not only reach the asteroid belt in as little as 7 months, but could be powerful enough to transport the asteroid to an earth orbit where it would be much more efficient to mine and transport these valuable resources to earth.

#### China is threatening to gatekeep REMs, which would cause a global shortage

Stavridis 21 [(James, retired US Navy admiral, chief international diplomacy and national security analyst for NBC News, senior fellow at JHU Applied Physics Library, PhD in Law and Diplomacy from Tufts) “U.S. Needs a Strong Defense Against China’s Rare-Earth Weapon,” Bloomberg Opinion, March 4, 2021, <https://www.bloomberg.com/opinion/articles/2021-03-04/u-s-needs-a-strong-defense-against-china-s-rare-earth-weapon>] TDI

You could be forgiven if you are confused about what’s going on with rare-earth elements. On the one hand, news reports indicate that China may increase production quotas of the minerals this quarter as a [goodwill gesture](https://www.scmp.com/news/china/diplomacy/article/3122501/china-raises-rare-earth-quotas-goodwill-trade-signal-us) to the Joe Biden administration. But other sources say that China may ultimately ban the export of the rare earths altogether on “[security concerns](https://www.bloomberg.com/news/articles/2021-02-19/china-may-ban-rare-earth-technology-exports-on-security-concerns?sref=QYxyklwO).” What’s really going on here? There are 17 elements considered [rare earths](https://www.bloomberg.com/news/articles/2021-02-16/why-rare-earths-are-achilles-heal-for-europe-u-s-quicktake) — lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium and yttrium — and while many aren’t actually rare in terms of global deposits, extracting them is difficult and expensive. They are used across high-tech manufacturing, including smartphones, fighter aircraft and components in virtually all advanced electronics. Of particular note, they are essential to many of the clean-energy technologies expected to come online in this decade. I began to focus on rare-earth elements when I commanded the North Atlantic Treaty Organization’s presence in Afghanistan, known as the International Security Assistance Force. While Afghans live in an extremely poor country, [studies](https://thediplomat.com/2020/02/afghanistans-mineral-resources-are-a-lost-opportunity-and-a-threat/) have assessed that they sit atop $1 trillion to $3 trillion in a wide variety of minerals, including rare earths. Some [estimates](https://www.fraserinstitute.org/article/afghanistans-rare-earth-element-bonanza) put the rare-earth levels alone at 1.4 million metric tons. But every time I tried to visit a mining facility, the answer I got from my security team was, “It’s too dangerous right now, admiral.” Unfortunately, despite a great deal of effort by the U.S. and NATO, those security challenges remain, deterring the large foreign-capital investments necessary to harvest the lodes. Which brings us back to Beijing. China controls roughly 80% of the rare-earths market, between what it mines itself and processes in raw material from elsewhere. If it decided to wield the weapon of restricting the supply — something it has repeatedly [threatened](https://www.wsj.com/articles/china-trade-fight-raises-specter-of-rare-earth-shortage-11559304000) to do — it would create a significant challenge for manufacturers and a geopolitical predicament for the industrialized world. It could happen. In 2010, Beijing threatened to cut off exports to Japan over the disputed Senkaku Islands. Two years ago, Beijing was reportedly considering restrictions on exports to the U.S. generally, as well as against specific companies (such as defense giant Lockheed Martin Corp.) that it deemed in violation of its policies against selling advanced weapons to Taiwan. President Donald Trump’s administration issued an executive order to spur the production of rare earths domestically, and created an [Energy Resource Governance Initiative](https://www.state.gov/wp-content/uploads/2019/06/Energy-Resource-Governance-Initiative-ERGI-Fact-Sheet.pdf) to promote international mining. The European Union and Japan, among others, are also aggressively seeking newer sources of rare earths. Given this tension, it was superficially surprising that China announced it would boost its mining quotas in the first quarter of 2021 by nearly 30%, reflecting a continuation in strong (and rising) demand. But the increase occurs under a shadow of uncertainty, as the Chinese Communist Party is undertaking a “review” of its policies concerning future sales of rare earths. In all probability, the tactics of the increase are temporary, and fit within a larger strategy. China will go to great lengths to maintain overall control of the global rare-earths supply. This fits neatly within the geo-economic approach of the [One Belt, One Road](https://www.bloomberg.com/opinion/articles/2019-10-30/china-is-determined-to-reshape-the-globe) initiative, which seeks to use a variety of carrots and sticks — economic, trade, diplomatic and security — to create zones of influence globally. In terms of rare earths, the strategy seems to be allowing carefully calibrated access to the elements at a level that makes it economically less attractive for competitors to undertake costly exploration and mining operations. This is similar to the oil-market strategy used by Russia and the Organization of Petroleum Exporting Countries for decades. Some free-market advocates believe that China will not take aggressive action choking off supply because that could [precipitate retaliation](https://www.bloomberg.com/opinion/articles/2021-02-22/china-weaponizing-rare-earths-technology-will-probably-backfire) or accelerate the search for alternate sources in global markets. What seems more likely is a series of targeted shutdowns directed against specific entities such as U.S. defense companies, Japanese consumer electronics makers, or European industrial concerns that have offended Beijing. The path to rare-earth independence for the U.S. must include: Ensuring supply chains of rare earths necessary for national security; promoting the exploitation of the elements domestically (and removing barriers to responsibly doing so); mandating that defense contractors and other critical-infrastructure entities wean themselves off Chinese rare earths; sponsoring research and development to find alternative materials, especially for clean energy technology; and creating a substantial stockpile of the elements in case of a Chinese boycott. This is a bipartisan agenda. The Trump administration’s [strategic assessment](https://www.commerce.gov/news/press-releases/2019/06/department-commerce-releases-report-critical-minerals) of what needs to be done (which goes beyond just 17 rare earths to include a total of 35 critical minerals) is thoughtful, and should serve as a basis for the Biden administration and Congress.

#### Shortages lead to unsustainable mining

Colagrossi 19 Mike Colagrossi (Freelance journalist) The dirty side of renewable energy, 7/29/2019, Big Think

The Paris Agreement, for instance, set an ambitious global goal to limit global warming to 2.7 degrees Fahrenheit (1.5 degree Celsius) by transitioning away from fossil fuels into renewables. However, a new extensive research report by the environmental non-profit Earthworks has found that this shift into a fossil fuel-free economy comes with its own set of egregious societal and conservationist problems. The blind rush to get "100 percent" renewable energy usage will get us nowhere. It's the same industrialist mindset that got us into this pickle. We need to approach this next energy wave with caution and care. Renewable energy transition Clean technologies require a wide variety of rare earth metals and other minerals, mostly including cobalt, nickel, lithium, aluminum, and silver. Batteries for electric cars makeup the biggest driver of mineral acquisition. Study co-author, Elsa Dominish, remarks that, "A rapid increase in demand for metals for renewable energy. . . could lead to mining of marginal or unconventional resources, which are often in more remote or biodiverse places." Many of these areas rich in minerals are remote wilderness, which have yet to be touched by any commercial endeavor. "The transition toward a renewable energy and transport system requires a complex mix of metals — such as copper, cobalt, nickel, rare earths, lithium, and silver — many of which have only previously been mined in small amounts," states Earthworks' report, in reference to the supply chains of the 14 most important minerals used in renewable energy production. Payal Sampat, director of Earthworks' Mining Program, sees this as a crucial time to focus on the core aspects of what an environmental movement should be focusing on. "We have an opportunity, if we act now, to ensure that our emerging clean energy economy is truly clean–as well as just and equitable–and not dependent on dirty mining. As we scale up clean energy technologies in pursuit of our necessarily ambitious climate goals, we must protect community health, water, human rights, and the environment." Under the supposition that all of human society would use 100 percent renewable energy by 2050, researchers charted out what other aspects of the environment would be affected as we attempted to reach this goal. The study explores the impacts that mining has on human society and culture, as well as the potential for even greater losses of biodiversity. With a world running completely on renewables, the metal requirements would be astronomical. The only way you're going to feed this need is by opening up more mines worldwide. Combined with our unsustainable mining practices, we'll be doing more harm than good. Large scale commercial strip mining of forests, slave labor, and ecological destruction would all be necessary to feed our current "green dream." Industrialism is the problem Mineral extraction levies an incredible cost on the communities and ecological landscape of a place. Material mined for renewable energy fuels the violation of human rights, pollutes local water sources, and often destroys wildlife. Cobalt, which is the most important component of rechargeable batteries, is mined in the Democratic Republic of Congo; often by children in dangerous working conditions. The authors of the report found that cobalt is the "metal of most concern for supply risks," as 60 percent of its production occurs in Congo, a country with an abysmal record of human and environmental catastrophes. In 2016, Amnesty International found that more than two dozen major electronics and automotive companies were failing to ensure that their supply chains of cobalt didn't include child labor. Amnesty blamed both Congolese officials and Western tech companies for ignoring the problems endemic to their supply chain. Irresponsible and dangerous cobalt mining is a global problem. According to the report, China's Congo Dongfang International Mining (CDM) owns exclusive rights to one quarter of the cobalt ore, of which the mines it flows from all employ child labor.

#### 3 implications:

#### 1: This mining would be awful for the environment

Steiner 17 Richard Steiner (A marine conservation biologist in Anchorage Alaska, was a marine conservation professor with the University of Alaska)Deep Sea Mining a New Ocean Threat, HUFFINGTON POST, 12/6/2017

But here’s the problem. The deep ocean, where mining is proposed, constitutes the largest and least understood biological habitat on Earth. It’s an Alice-in-Wonderland world of extremes, extraordinary adaptions, bizarre organisms, beauty and mystery. The region is characterized by darkness (infused with sparkling bioluminescence), extreme pressure, cold temperatures, high biodiversity (perhaps millions of species, most yet to be identified), slow growth and reproductive rates, and high sensitivity to disturbance (low resilience). Given our poor understanding of deep sea ecosystems, growing industrial interest, rudimentary management, and insufficient protected areas, the risk of irreversible environmental damage here is real. Environmental risks and impacts of deep sea mining would be enormous and unavoidable, including seabed habitat degradation over vast ocean areas, species extinctions, reduced habitat complexity, slow and uncertain recovery, suspended sediment plumes, toxic plumes from surface ore dewatering, pelagic ecosystem impacts, undersea noise, ore and oil spills in transport, and more. Due to the global rarity of deep sea hydrothermal vent ecosystems, the [impact of vent mining](http://www.deepseaminingoutofourdepth.org/wp-content/uploads/Steiner-Independent-review-DSM1.pdf) would be disproportionately high relative to terrestrial mining. Full-scale nodule mining on the abyssal plain would affect thousands of square miles of ocean floor, kill attached invertebrate communities, and create huge subsea sediment plumes that would flow and settle over thousands of square miles of seafloor. Such sedimentation would smother seabed habitat, reduce habitat complexity and biodiversity over vast areas, and post-mining recovery would be extremely slow. Mining of cobalt crusts on seamounts would cause enormous, possibly irreversible impacts to unique, productive seamount ecosystems.

#### Marine biodiversity loss is catastrophic- ecosystems and climate

Palmer 17 Cristiana Paşca Palmer (Executive Secretary of the Secretariat of the Convention on Biological Diversity.) Marine Biodiversity and Ecosystems Underpin a Healthy Planet and Social Well-Being, MAY/2017, https://unchronicle.un.org/article/marine-biodiversity-and-ecosystems-underpin-healthy-planet-and-social-well-being

In no other realm is the importance of biodiversity for sustainable development more essential than in the ocean. Marine biodiversity, the variety of life in the ocean and seas, is a critical aspect of all three pillars of sustainable development—economic, social and environmental—supporting the healthy functioning of the planet and providing services that underpin the health, well­-being and prosperity of humanity. The ocean is one of the main repositories of the world's biodiversity. It constitutes over 90 per cent of the habitable space on the planet and contains some 250,000 known species, with many more remaining to be discovered—at least two thirds of the world's marine species are still unidentified.1 The ocean, and the life therein, are critical to the healthy functioning of the planet, supplying half of the oxygen we breathe2 and absorbing annually about 26 per cent of the anthropogenic carbon dioxide emitted into the atmosphere.3 Evidence continues to emerge demonstrating the essential role of marine biodiversity in underpinning a healthy planet and social well-being. The fishery and aquaculture sectors are a source of income for hundreds of millions of people, especially in low-income families, and contribute directly and indirectly to their food security. Marine ecosystems provide innumerable services for coastal communities around the world. For example, mangrove ecosystems are an important source of food for more than 210 million people4 but they also deliver a range of other services, such as livelihoods, clean water, forest products, and protection against erosion and extreme weather events. Not surprisingly, given the resources that the ocean provides, human settlements have developed near the coast: 38 per cent of the world's population lives within 100 km of the coast, 44 per cent within 150 km, 50 per cent within 200 km, and 67 per cent within 400 km.5 Roughly 61 per cent of the world's total gross domestic product comes from the ocean and the coastal areas within 100 km of the coastline.6 Coastal population densities are 2.6 times larger than in inland areas and benefit directly and indirectly from the goods and services of coastal and marine ecosystems, which contribute to poverty eradication, sustained economic growth, food security and sustainable livelihoods and inclusive work, while hosting large biodiversity richness and mitigating the impacts of climate change.7 Thus, pressures that adversely impact marine biodiversity also undermine and compromise the healthy functioning of the planet and its ability to provide the services that we need to survive and thrive. Moreover, as demands on the ocean continue to rise, the continued provisioning of these services will be critical. The consequences of biodiversity loss are often most severe for the poor, who are extremely dependent on local ecosystem services for their livelihoods and are highly vulnerable to impacts on such services.

#### 2: Biodiversity is uniquely key – independently stops disease

Burkle 18, [Frederick is Senior Fellow & Scientist @ Harvard Humanitarian Initiative, Current Crises & Potential Conflicts in Asia and the Pacific: Challenges Facing Global Health or Global Public Health by a Different Name April, ResearchGate]

Biodiversity areas are key to global survival as they contain the majority of the world’s plants and vertebrates that are the foundation of human and ecosystem survival. Globally, 35 “biodiversity hotspots” or “centers of diversity” exist as areas with high levels of species diversity and represent the most important sites for biodiversity conservation worldwide. They are identified globally and nationally using global standardized criteria and thresholds. A hotspot must meet two strict criteria:96 • It must have at least 1,500 vascular plants as endemics containing a high percentage of plant life found nowhere else on the planet. A hotspot, in other words, is irreplaceable. • It must have 30% or less of its original natural vegetation. In other words, it must be threatened as a hotspot. They provide food diversity, fresh water, maintain social fertility, pollinate crops, balance species of bacteria, viruses, and other organisms, provide raw materials and fuel, and regulate climate and air quality. High biodiversity is the world’s major safeguard against infectious diseases. 96

#### Disease causes extinction

Millett 17 [Piers Consultant for the World Health Organization, PhD in International Relations and Affairs, University of Bradford, Andrew Snyder-Beattie. “Existential Risk and Cost-Effective Biosecurity.” http://online.liebertpub.com/doi/pdfplus/10.1089/hs.2017.0028]

Historically, disease events have been responsible for the greatest death tolls on humanity. The 1918 flu was responsible for more than 50 million deaths,1 while smallpox killed perhaps 10 times that many in the 20th century alone.2 The Black Death was responsible for killing over 25% of the European population,3 while other pandemics, such as the plague of Justinian, are thought to have killed 25 million in the 6th century—constituting over 10% of the world’s population at the time.4 It is an open question whether a future pandemic could result in outright human extinction or the irreversible collapse of civilization. A skeptic would have many good reasons to think that existential risk from disease is unlikely. Such a disease would need to spread worldwide to remote populations, overcome rare genetic resistances, and evade detection, cures, and countermeasures. Even evolution itself may work in humanity’s favor: Virulence and transmission is often a trade-off, and so evolutionary pressures could push against maximally lethal wild-type pathogens.5,6 While these arguments point to a very small risk of human extinction, they do not rule the possibility out entirely. Although rare, there are recorded instances of species going extinct due to disease—primarily in amphibians, but also in 1 mammalian species of rat on Christmas Island.7,8 There are also historical examples of large human populations being almost entirely wiped out by disease, especially when multiple diseases were simultaneously introduced into a population without immunity. The most striking examples of total population collapse include native American tribes exposed to European diseases, such as the Massachusett (86% loss of population), Quiripi-Unquachog (95% loss of population), and theWestern Abenaki (which suffered a staggering 98% loss of population).9 Piers Millett, PhD, is a Senior Research Fellow, and Andrew Snyder-Beattie, MS, is Director of Research; both at the University of Oxford, Future of Humanity Institute, Oxford, England. ª Piers Millett and Andrew Snyder-Beattie, 2017; Published by Mary Ann Liebert, Inc. This Open Access article is distributed under the terms of the Creative Commons License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited. Health Security Volume 15, Number 4, 2017 Mary Ann Liebert, Inc. DOI: 10.1089/hs.2017.0028 373 In the modern context, no single disease currently exists that combines the worst-case levels of transmissibility, lethality, resistance to countermeasures, and global reach. But many diseases are proof of principle that each worst-case attribute can be realized independently. For example, some diseases exhibit nearly a 100% case fatality ratio in the absence of treatment, such as rabies or septicemic plague. Other diseases have a track record of spreading to virtually every human community worldwide, such as the 1918 flu,10 and seroprevalence studies indicate that other pathogens, such as chickenpox and HSV-1, can successfully reach over 95% of a population.11,12 Under optimal virulence theory, natural evolution would be an unlikely source for pathogens with the highest possible levels of transmissibility, virulence, and global reach. But advances in biotechnology might allow the creation of diseases that combine such traits. Recent controversy has already emerged over a number of scientific experiments that resulted in viruses with enhanced transmissibility, lethality, and/or the ability to overcome therapeutics.13-17 Other experiments demonstrated that mousepox could be modified to have a 100% case fatality rate and render a vaccine ineffective.18 In addition to transmissibility and lethality, studies have shown that other disease traits, such as incubation time, environmental survival, and available vectors, could be modified as well.19-21 Although these experiments had scientific merit and were not conducted with malicious intent, their implications are still worrying. This is especially true given that there is also a long historical track record of state-run bioweapon research applying cutting-edge science and technology to design agents not previously seen in nature. The Soviet bioweapons program developed agents with traits such as enhanced virulence, resistance to therapies, greater environmental resilience, increased difficulty to diagnose or treat, and which caused unexpected disease presentations and outcomes.22 Delivery capabilities have also been subject to the cutting edge of technical development, with Canadian, US, and UK bioweapon efforts playing a critical role in developing the discipline of aerobiology.23,24 While there is no evidence of staterun bioweapons programs directly attempting to develop or deploy bioweapons that would pose an existential risk, the logic of deterrence and mutually assured destruction could create such incentives in more unstable political environments or following a breakdown of the Biological Weapons Convention.25The possibility of a war between great powers could also increase the pressure to use such weapons—during the World Wars, bioweapons were used across multiple continents, with Germany targeting animals in WWI,26 and Japan using plague to cause an epidemic in China during WWII.27

#### 3: Climate solutions rely on REMs

Arrobas et al 17 [(Daniele La Porta Arrobas is a senior mining specialist with the World Bank based in Washington DC and has degrees in Geoscience and Environmental Management, Kirsten Hund is a senior mining specialist with the Energy and Extractives Global Practice of the World Bank and holds a Master’s in IR from the University of Groningen in the Netherlands, Michael Stephen McCormick, Jagabanta Ningthoujam has an MA in international economics and international development from JHU and a BS in MechE from Natl University of Singapore, John Drexhage also works at the Intl Institute for Sustainable Development) “The Growing Role of Minerals and Metals for a Low Carbon Future,” World Bank, June 30, 2017, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/207371500386458722/the-growing-role-of-minerals-and-metals-for-a-low-carbon-future>] TDI

* Full report - https://documents1.worldbank.org/curated/en/207371500386458722/pdf/117581-WP-P159838-PUBLIC-ClimateSmartMiningJuly.pdf

Climate and greenhouse gas (GHG) scenarios have typically paid scant attention to the metal implications necessary to realize a low/zero carbon future. The 2015 Paris Agreement on Climate Change indicates a global resolve to embark on development patterns that would significantly be less GHG intensive. One might assume that nonrenewable resource development and use will also need to decline in a carbon-constrained future. This report tests that assumption, identifies those commodities implicated in such a scenario and explores ramifications for relevant resource-rich developing countries. Using wind, solar, and energy storage batteries as proxies, the study examines which metals will likely rise in demand to be able to deliver on a carbon-constrained future. Metals which could see a growing market include aluminum (including its key constituent, bauxite), cobalt, copper, iron ore, lead, lithium, nickel, manganese, the platinum group of metals, rare earth metals including cadmium, molybdenum, neodymium, and indium—silver, steel, titanium and zinc. The report then maps production and reserve levels of relevant metals globally, focusing on implications for resource-rich developing countries. It concludes by identifying critical research gaps and suggestions for future work.

#### Warming causes extinction

Peter Kareiva 18,( Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al., September 2018, “Existential risk due to ecosystem collapse: Nature strikes back,” Futures, Vol. 102, p. 39-50//recut chskk)

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (climate change, global freshwater cycle, and ocean acidification) do pose existential risks. This is because of intrinsic positive feedback loops, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield surprises. In addition, climate, freshwater, and ocean acidification are all directly connected to the provision of food and water, and shortages of food and water can create conflict and social unrest. Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields). Climate change intersects with freshwater resources because it is expected to exacerbate drought and water scarcity, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. Ample clean water is not a luxury—it is essential for human survival. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease. Finally, ocean acidification is linked to climate change because it is driven by CO2 emissions just as global warming is. With close to 20% of the world’s protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases storm frequency and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, coastal communities will be exposed to unprecedented storm surge—and may be ravaged by recurrent storms. A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition “rare” (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare extreme events because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people. 4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes Humans are remarkably ingenious, and have adapted to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm. In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, the Earth’s climate system is rife with positive feedback loops. In particular, as CO2 increases and the climate warms, that very warming can cause more CO2 release which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios. Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002). Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that forest fires will become more frequent and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This catastrophic fire embodies the sorts of positive feedbacks and interacting factors that could catch humanity off-guard and produce a true apocalyptic event. Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming. Out of all types of feedbacks, water vapor and the ice-albedo feedbacks are the most clearly understood mechanisms. Losses in reflective snow and ice cover drive up surface temperatures, leading to even more melting of snow and ice cover—this is known as the ice-albedo feedback (Curry, Schramm, & Ebert, 1995). As snow and ice continue to melt at a more rapid pace, millions of people may be displaced by flooding risks as a consequence of sea level rise near coastal communities (Biermann & Boas, 2010; Myers, 2002; Nicholls et al., 2011). The water vapor feedback operates when warmer atmospheric conditions strengthen the saturation vapor pressure, which creates a warming effect given water vapor’s strong greenhouse gas properties (Manabe & Wetherald, 1967). Global warming tends to increase cloud formation because warmer temperatures lead to more evaporation of water into the atmosphere, and warmer temperature also allows the atmosphere to hold more water. The key question is whether this increase in clouds associated with global warming will result in a positive feedback loop (more warming) or a negative feedback loop (less warming). For decades, scientists have sought to answer this question and understand the net role clouds play in future climate projections (Schneider et al., 2017). Clouds are complex because they both have a cooling (reflecting incoming solar radiation) and warming (absorbing incoming solar radiation) effect (Lashof, DeAngelo, Saleska, & Harte, 1997). The type of cloud, altitude, and optical properties combine to determine how these countervailing effects balance out. Although still under debate, it appears that in most circumstances the cloud feedback is likely positive (Boucher et al., 2013). For example, models and observations show that increasing greenhouse gas concentrations reduces the low-level cloud fraction in the Northeast Pacific at decadal time scales. This then has a positive feedback effect and enhances climate warming since less solar radiation is reflected by the atmosphere (Clement, Burgman, & Norris, 2009). The key lesson from the long list of potentially positive feedbacks and their interactions is that runaway climate change, and runaway perturbations have to be taken as a serious possibility. Table 2 is just a snapshot of the type of feedbacks that have been identified (see Supplementary material for a more thorough explanation of positive feedback loops). However, this list is not exhaustive and the possibility of undiscovered positive feedbacks portends even greater existential risks. The many environmental crises humankind has previously averted (famine, ozone depletion, London fog, water pollution, etc.) were averted because of political will based on solid scientific understanding. We cannot count on complete scientific understanding when it comes to positive feedback loops and climate change.

## 3

#### Interpretation—the aff must disclose the plan text, framework, and advantage area 30 minutes before the round.

#### Violation—they don’t have a wiki

#### Standards:

#### Prep and clash—two internal links—a) neg prep—4 minutes of prep is not enough to put together a coherent 1nc or update generics—30 minutes is necessary to learn a little about the affirmative and piece together what 1nc positions apply and cut and research their applications to the affirmative b) aff quality—plan text disclosure discourages cheap shot affs. If the aff isn’t inherent or easily defeated by 20 minutes of research, it should lose—this will answer the 1ar’s claim about innovation—with 30 minutes of prep, there’s still an incentive to find a new strategic, well justified aff, but no incentive to cut a horrible, incoherent aff that the neg can’t check against the broader literature.

#### Fairness is a voter and comes first – debate’s a game that needs rules to evaluate it which is proven by wins, losses, and speaks – they concede it cuz they want you to evaluate their arguments fairly. Education is a voter since it’s the reasons school fund debate.

#### Drop the debater – there’s no argument to drop and punishment is key to deter future abuse.

#### Use competing interps – reasonability invites arbitrary judge intervention since we don’t know your bs meter and causes a race to get away with ‘reasonable’ abuse.

#### No RVIs – a) illogical – you shouldn’t win for being fair – it’s a litmus test for engaging in substance, b) chilling effect – forces you to split your 2AR so you can’t collapse and misconstrue the 2NR, c) topic ed – prevents 1AR scripting and allows us to get back to substance after resolving theory.

#### This shell comes first – the aff advocacy affects a larger portion of the debate since it determines every speech after it and pre-round neg prep.