# UH round 4

### 1NC – Webb

#### their re-tooling of the code gets coopted within the university – this ev is unbelievably fire

Webb, Darren. "Bolt-holes and breathing spaces in the system: On forms of academic resistance (or, can the university be a site of utopian possibility?)." Review of Education, Pedagogy, and Cultural Studies 40.2 (2018): 96-118. (Senior Lecturer in Education at the University of Sheffield)//Elmer

It is easy to be seduced by the language of the undercommons. Embodying and enacting it, however, is difficult indeed. Being within and against the university, refusing the call to order through insolent obstructive unprofessionalism, is almost impossible to sustain. Halberstam (2009, 45) describes the undercommons as “a marooned community of outcast thinkers who refuse, resist, and renege on the demands of rigor, excellence, and productivity.” A romantic and appealing notion for sure but **refusing and reneging on “the university of excellence” will cost you your job.** When Moten **describes subversion** as a “series of immanent upheavals” expressed through “vast repertoires of high-frequency complaints, imperceptible frowns, withering turns, silent sidesteps, and ever-vigilant attempts not to see and hear” (2008, 1743), **one is reminded instantly of Thomas Docherty, disciplined and suspended for his negative vibes.**7 Being with and for the maroon community is difficult too. First of all, “Where and how can we find/see the Undercommons at work?” (Ĉiĉigoj, Apostolou-Hölscher, and Rusham 2015, 265). Where and how can one find those liminal spaces of sabotage and subversion, and how does one occupy them in a spirit of hapticality, study, and militant arrhythmia that brings the utopic underground to the surface of the fierce and urgent now? Beautiful language, but how does one live it? Networks do, of course, exist—the Undercommoning Collective, the Edu-Factory Collective, the International Network for Alternative Academia, to name but a few. These are promising spaces for bringing together and harboring the maroons and the fugitives. But networks are typically **short-lived**, and—as Harney and Moten warned—**there is a danger of institutionalization, of taking institutional practices with you** into alternative spaces “**because we’ve been inside so much**” (Harney and Moten 2013, 148). And so, predictably, **meetings of the fugitives come with structure, order, an official agenda**, and circulated minutes. The outcasts convene in conventional academic conferences, with parallel sessions, panels of papers, lunch breaks, wine and nibbles (e.g., Edu-Factory 2012). These spaces offer time out, welcome respite, a breathing space, a trip abroad, and then one returns to work. If hapticality, the touch of the undercommons, is “a visceral register of experience … the feel that what is to come is here” (Bradley 2014, 129–130), then this seems elusive. It is hard to detect a sense of the utopic undercommons rising to the surface of the corporate-imperial university. Moten describes the call to disorder and to study as a way to “excavate new aesthetic, political, and economic dispositions” (Moten 2008, 1745). But this notion of excavating is highly problematic. It is common within the discourse of “everyday utopianism”—finding utopia in the everyday, recovering lost or repressed transcendence in “everydayness” (Gardiner 2006)—to describe the process of utopian recovery in terms of excavating: excavating repressed desires, submerged longings, suppressed histories, untapped possibilities. But the fundamental questions of where to dig and how to identify a utopian “find” are never adequately addressed (see Webb 2017). Gardiner defines utopia as “a series of forces, tendencies and possibilities that are immanent in the here and now, in the pragmatic activities of everyday life” (2006, 2). But how are these forces, tendencies and possibilities to be identified and recovered? For Harney and Moten, **it is through study, hapticality and militant arrhythmia**. These are slippy concepts, however, evading concrete material referents. What is it to inhabit the undercommons? Those who have written of their experiences refer to “small acts of marronage” such as poaching resources and redeploying them in ways at odds with the university’s designs and demands (Reddy 2016, 7), or exploiting funding streams “to form cracks in the institution that enable the Others to invade the university” (Smith, Dyke, and Hermes 2013, 150). For Adusei-Poku (2015), the undercommons is a space of refuge which is all about survival (2015, 4–5). We who feel homeless in the university are forced into refuge. We gather together to survive. We may gain satisfaction from small acts of marronage, but this is less about bringing the utopic common underground to the surface as it is a form of “radical escapism” (Adusei-Poku 2015, 4). Benveniste (2015, v) tells us that: “The undercommons has no set location and no return address. There is no map for entering and no guide for staying. The only condition is a living appetite. Listen to its hunger for difference.” We need more than poetry, however. And **we need more than a series of minor acts of resistance**. As Srnicek and Williams rightly emphasize, resistance is a defensive, reactive gesture, resisting against. Resistance is not a utopian endeavour: “We do not resist a new world into being” (Srnicek and Williams 2016, 47). The undercommons, when one can find it, is a bolt hole, a place of refuge, a breathing space in the system. We need something more. The occupation Can the occupied building operate as a site of utopian possibility within the corporate-imperial university? Reflections on, and theorizations of, two recent waves of occupation—“Occupied California” 2009–2010 and the UK Occupations 2010–2011—have answered this question affirmatively. The “occupation” should not be understood here as solely or necessarily “student occupation.” It goes without saying—though sadly so often does need saying —that “faculty also have a responsibility to fight with and for students” (Smeltzer and Hearn 2015, 356). Though led by a new historical subject, “the graduate without a future” (Schwarz-WeinStein 2015, 11), the importance of faculty support for the occupations was emphasized on both sides of the Atlantic (Research and Destroy 2010, 11; Dawson 2011, 112; Holmes and R&D and Dead Labour 2011, 14; Ismail 2011, 128; Newfield and EduFactory 2011, 26). Long before Occupy took shape in Zuccotti Park, “occupation” was being heralded as the harbinger of a new society and a new way of being. If we return to the notion of creating utopian spaces, the key aim for some of the occupiers was to create communes within the university walls—to communize space (Inoperative Committee 2011, 6).8 Communization here is understood as a form of insurrectionary anarchism that refuses to talk of a transition to communism, insisting instead upon the immediate formation of zones of activity removed from exchange, money, compulsory labor, and the impersonal domination of the commodity form (Anon 2010a, 5). As one pamphlet declared: We will take whatever measures are necessary both to destroy this world as quickly as possible and to create, here and now, the world we want: a world without wages, without bosses, without borders, without states. (Anon 2010d, 34) This is a revolutionary anarchism that takes the university campus as the site for a practice—communization—that not only prefigures but also realizes the vision of a free society. Heavily influenced by The Coming Insurrection (Invisible Committee 2009), but tapping into a long tradition of anarchist theory and practice from Hakim Bey’s Temporary Autonomous Zones (Bey 1985) to David Graeber’s Direct Action (Graeber 2009), occupation becomes “the creation of a momentary opening in capitalist time and space, a rearrangement that sketches the contours of a new society” (Research and Destroy 2010, 11). It is “an attempt to imagine a new kind of everyday life” (Hatherley 2011, 123). Firth (2012) refers to these momentary openings as critical, experimental utopias: Such utopias are … simultaneously immanent and prefigurative. They are immanent insofar as they allow space for the immediate expression of desires, satisfaction of needs and also the articulation of difference or dissent. They are prefigurative to the extent that they allow one to practice and exemplify what one would like to see at a more proliferative range in the future (26) The ultimate aim is for the practice to spread beyond the campus through a dual process of provocative rupture—the idea that insurrectionary moments can unleash the collective imagination and stimulate an outpouring of creativity that blows apart common sense and offers glimpses of a future world (Gibson-Graham 2006, 51; Shukaitis and Graeber 2007, 37)—and “contaminationism,” that is, spreading by means of example (Graeber 2009, 211). It may well have been the case that communism was realized on the campuses of Berkeley and UCL, that a momentary opening in capitalist space/time appeared through which another world could be glimpsed. The occupation, however—whether California, London, or anywhere else—is likely always to remain a localized temporary disruptive practice. A practice with utopian potency, for sure, in terms of suspending normalized forms of discipline and opening new egalitarian discursive spaces (Rheingans and Hollands 2013; Nişancioğlu and Pal 2016). In terms of wider systemic change, however, “small interventions consisting of relatively non-scalable actions are highly unlikely to ever be able to reorganise our socioeconomic system” (Srnicek and Williams 2016, 29). What “the occupation” demonstrates more than anything is the reality of the corporate-imperial university, as the institutional hierarchy, backed by the carceral power of the police and criminal justice system, inevitably disperses the occupiers—often using militarized force—and repossesses the occupied space in a strong assertion of its ownership rights not only to university buildings but also to what constitutes legitimate thought and behavior within them (on this see Docherty 2015, 90). The significance, and utopian potential, one attaches to campus occupations depends in part upon the significance one attaches to the university as a site of struggle. For the Edu-Factory Collective: As was the factory, so now is the university. Where once the factory was a paradigmatic site of struggle between workers and capitalists, so now the university is a key space of conflict, where the ownership of knowledge, the reproduction of the labour force, and the creation of social and cultural stratifications are all at stake. This is to say the university is not just another institution subject to sovereign and governmental controls, but a crucial site in which wider social struggles are won and lost. (Caffentzis and Federici 2011, 26) Clearly, if this is true, then the form the struggle takes, and the example it sets, is of immense significance. Srnicek and Williams describe as “wishful thinking” the idea that the occupation might spread beyond the campus by means of rupture or contamination (2016, 35). However, if the university really is a key site of class struggle (Seybold 2008, 120; Haiven and Khasnabish 2014, 38), a site through which wider struggles are refracted and won or lost, then the transformative potential of the occupation needs to be attended to seriously. The analysis of the university offered by the Edu-Factory Collective is, however, outdated. Sounding like Daniel Bell writing in 1973 about how universities had become the “axial structures” of post-industrial society (Bell 1973, 12), the analysis does not hold water today. Moten overdoes it when he tells us that “the university is a kind of corpse. It is dead. It’s a dead institutional body” (Moten 2015, 78). What is clear, however, is that “focusing on the university as a site of radical transformation is a mistake” (Holmes and R&D and Dead Labour 2011, 13). As has been widely noted, there is very little distinguishing universities from other for-profit corporations (Readings 1996; Lustig 2005; Washburn 2005; Shear 2008, Tuchman 2009). What does separate them is their inefficiency, due in large part to the fact that universities operate also as medieval guilds, with faculties “ruled by masters who lord over journeymen and apprentices in an artisanal system of production” (Jemielniak and Greenwood 2015, 77). If the university is a sinister hybrid monstrosity—part medieval guild, part criminal corporation—which has no role other than reproducing its own privilege, then no special status can be attributed to campus protests. In this case, “A free university in the midst of a capitalist society is like a reading room in a prison” (Research and Destroy 2010, 10). A reading room in a prison. Another apposite metaphor. The occupation is a safe space, offering temporary respite, a place to hide, a refuge, a bolt-hole, a breathing space. As with the utopian classroom and the undercommons, what the occupation suggests is that “defending small bunkers of autonomy against the onslaught of capitalism is the best that can be hoped for” (Srnicek and Williams 2016, 48). Conclusion Zaslove was right to characterize utopian pedagogy within the corporateimperial university as the search for bolt-holes and breathing spaces in the system. He himself suggests that, “All university classes should become dialogic-experiential models that educate by expanding the zones of contact with wider communities” (2007, 102). Like so many others, Zaslove sees dialogic-experiential models of education beginning in the classroom then expanding outward. The literature is full of references to “exceeding the limits of the university classroom” (Coté, Day, and de Peuter 2007a, 325), “extend [ing] beyond the boundaries of the campus” (Ruben 2000, 211), and “breeching the walls of the university compounds and spilling into the streets” (Research and Destroy 2010, 10). This all brings to mind Giroux’s notion of academics as border crossers (Giroux 1992), but it also paints a picture of academics taking as their starting point the university and from there crossing the border into the community and the street. The University can be the site for fleeting, transitory, small-scale experiences of utopian possibility—in the classroom, the undercommons, the occupation. It cannot be the site for transformative utopian politics. It cannot even be the starting point for this. Given the corporatization and militarization of the university, academics are increasingly becoming “functionaries of elite interests” inhabiting a culture which serves to reproduce these interests (Shear 2008, 56). Within the university, “radical” initiatives or movements will soon be co-opted, recuperated, commodified, and neutralized (Gibson-Graham 2006, xxvi; Seybold 2008, 123; Neary 2012b, 249; Rolfe 2013, 21). Institutional habitus weights so heavily that projects born in the university will be scarred from the outset by a certain colonizing “imaginary of education” (Burdick and Sandlin 2010, 117). And we have long known that the university is but one space of learning, and perhaps not a very important one at that.

### 1NC – Khan

#### Extinction outweighs because it precludes the possibility of future value, and existential focus is good and valuable – acknowledging and discussing possibility of self-destruction shifts targets away from each other and towards extinction.

Khan ‘18

Risalat Khan is an activist and intrapreneur from Bangladesh passionate about addressing climate change, biodiversity loss, and other existential challenges. He was featured by The Guardian as one of the “young climate campaigners to watch” (2015). As a campaigner with the global civic movement Avaaz (2014-17), Risalat was part of a small core team that spearheaded the largest climate marches in history with a turnout of over 800,000 across 2,000 cities. After fighting for the Paris Agreement, Risalat led a campaign joined by over a million people to stop the Rampal coal plant in Bangladesh to protect the Sundarbans World Heritage forest, and elicited criticism of the plant from Crédit Agricolé through targeted advocacy. Currently, Risalat is pursuing an MPA in Environmental Science and Policy at Columbia University as a SIPA Environmental Fellow. He also regularly consults with mission-driven organizations on building effective and loving team cultures. Previously, he graduated magna cum laude from Amherst College, where he launched a campaign that eventually resulted in the replacement of the College’s racist mascot ‘Lord Jeff’ with a cuddly ‘Mammoth’. Finally, Risalat is absolutely blown away to be alive at this amazing time in history, and approaches life like a roller-coaster ride, “5 reasons why we need to start talking about existential risks”, World Economic Forum, 10 January 2018, accessed: 15 December 2020, <https://www.weforum.org/agenda/2018/01/5-reasons-start-talking-existential-risks-extinction-moriori/>, R.S.

I find the story of the Moriori profound. It teaches me two lessons. Firstly, that human culture is far from immutable. That we can struggle against our baser instincts. That we can master them and rise to unprecedented challenges. Secondly, that even this does not make us masters of our own destiny. We can make visionary choices, but the future can still surprise us.

This is a humbling realization. Because faced with an uncertain future, the only wise thing we can do **is prepare** for possibilities. Standing at the launch pad of the Fourth Industrial Revolution, the possibilities seem endless. They range from an era of abundance to the end of humanity, and everything in between. How do we navigate such a wide and divergent spectrum?

I am an optimist. From my bubble of privilege, life feels like a rollercoaster ride full of ever more impressive wonders, even as I try to fight the many social injustices that still blight us. However, the accelerating pace of change amid uncertainty elicits one fundamental observation. Among the infinite future possibilities, only **one outcome is** truly **irreversible: extinction.**

Concerns about extinction are often dismissed as apocalyptic alarmism. Sometimes, they are. But repeating that mankind is still here after 70 years of existential warning about nuclear warfare is a straw man argument. The fact that a 1000-year flood has not happened does not negate its possibility. And there have been far too many nuclear near-misses to rest easy.

As the World Economic Forum’s Annual Meeting in Davos discusses how to create a shared future in a fractured world, here are five reasons why the possibility of existential risks should raise the stakes of conversation:

1. **Extinction is the rule, not the exception**

More than 99.9% of all the species that ever existed are gone. Deep time is unfathomable to the human brain. But if one cares to take a tour of the billions of years of life’s history, we find a litany of forgotten species. And we have only discovered a mere fraction of the extinct species that once roamed the planet.

In the speck of time since the first humans evolved, more than 99.9% of all the distinct human cultures that have ever existed are extinct. Each hunter-gatherer tribe had its own mythologies, traditions and norms. They wiped each other out, or coalesced into larger formations following the agricultural revolution. However, as major civilizations emerged, even those that reached incredible heights, such as the Egyptians and the Romans, eventually collapsed.

It is only in the very recent past that we became a truly global civilization. Our interconnectedness continues to grow rapidly. “Stand or fall, we are the last civilization”, as Ricken Patel, the founder of the global civic movement Avaaz, put it.

2. **Environmental pressures can drive extinction**

More than 15,000 scientists just issued a ‘warning to humanity’. They called on us to reduce our impact on the biosphere, 25 years after their first such appeal. The warning notes that we are far outstripping the capacity of our planet in all but one measure of ozone depletion, including emissions, biodiversity, freshwater availability and more. The scientists, not a crowd known to overstate facts, conclude: “soon it will be too late to shift course away from our failing trajectory, and time is running out”.

In his 2005 book Collapse, Jared Diamond charts the history of past societies. He makes the case that overpopulation and resource use beyond the carrying capacity have often been important, if not the only, drivers of collapse. Even though we are making important incremental progress in battles such as climate change, we must still achieve tremendous step changes in our response to several major environmental crises. We must do this even while the world’s population continues to grow. These pressures are bound to exert great stress on our global civilization.

3. **Superintelligence**: unplanned obsolescence?

Imagine a monkey society that foresaw the ascendance of humans. Fearing a loss of status and power, it decided to kill the proverbial Adam and Eve. It crafted the most ingenious plan it could: starve the humans by taking away all their bananas.

Foolproof plan, right? This story describes the fundamental difficulty with superintelligence. A superintelligent being may always do something entirely different from what we, with our mere mortal intelligence, can foresee. In his 2014 book Superintelligence, Swedish philosopher Nick Bostrom presents the challenge in thought-provoking detail, and advises caution.

Bostrom cites a survey of industry experts that projected a 50% chance of the development of artificial superintelligence by 2050, and a 90% chance by 2075. The latter date is within the life expectancy of many alive today.

Visionaries like Stephen Hawking and Elon Musk have warned of the existential risks from artificial superintelligence. Their opposite camp includes Larry Page and Mark Zuckerberg. But on an issue that concerns the future of humanity, is it really wise to ignore the guy who explained the nature of space to us and another guy who just put a reusable rocket in it?

4. Technology: known knowns and **unknown unknowns**

Many fundamentally disruptive technologies are coming of age, from bioengineering to quantum computing, 3-D printing, robotics, nanotechnology and more. Lord Martin Rees describes potential existential challenges from some of these technologies, such as a bioengineered pandemic, in his book Our Final Century.

Imagine if North Korea, feeling secure in its isolation, could release a virulent strain of Ebola, engineered to be airborne. Would it do it? Would ISIS?

Projecting decades forward, we will likely develop capabilities that are unthinkable even now. The unknown unknowns of our technological path are profoundly humbling.

5. **'The Trump Factor'**

Despite our scientific ingenuity, we are still a confused and confusing species. Think back to two years ago, and how you thought the world worked then. Has that not been upended by the election of Donald Trump as US President, and everything that has happened since?

The mix of billions of messy humans will forever be unpredictable. When the combustible forces described above are added to this melee, we find ourselves on a tightrope.

What choices must we now make now to create a shared future, in which we are not at perpetual risk of destroying ourselves?

Common enemy to common cause

Throughout history, we have **rallied against the ‘other’.** Tribes have overpowered tribes, empires have conquered rivals. Even today, our fiercest displays of unity typically happen at wartime. We give our lives for our motherland and defend nationalistic pride like a wounded lion.

But like the early Morioris, we 21st-century citizens find ourselves on an increasingly unstable island. We may have a violent past, but we have no more dangerous enemy than ourselves. Our task is to find our own Nunuku’s Law. Our own shared contract, based on equity, would help us navigate safely. It would ensure a future that unleashes the full potential of our still-budding human civilization, in all its diversity.

We cannot do this unless we are humbly grounded in the possibility of our own destruction. Survival is life’s primal instinct. In the absence of a common enemy, we must find **common cause in survival.** Our future may depend on whether we realize this.

### 1NC – Cap Good 😊

#### Cap’s sustainable thanks to dematerialization and the alt’s transition fails.

McAfee, 20—cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management, former professor at Harvard Business School and fellow at Harvard’s Berkman Center for Internet and Society (Andrew, “Why Degrowth Is the Worst Idea on the Planet,” <https://www.wired.com/story/opinion-why-degrowth-is-the-worst-idea-on-the-planet/>, dml)

Over that same span, an unexpected and encouraging pattern has emerged: The world's richest countries have learned how to reduce their footprint on Earth. They're polluting less, using less land and water, consuming smaller amounts of important natural resources, and doing better in many other ways. Some of these trends are also now visible in less affluent countries.

However, many in the degrowth movement seem to have trouble taking yes for an answer. The claims I just made are widely resisted or ignored. Some say they’ve been debunked. Of course, debate over empirical claims like these is normal and healthy. Our impact on our planet is hugely important. But something less healthy is at work here. As Upton Sinclair put it, “It is difficult to get a man to understand something when his salary depends upon his not understanding it.” Some voices in the conversation about the environment seem wedded to the idea that degrowth is necessary, and they are unwilling or unable to walk away from it, no matter the evidence.

But evidence remains a powerful way to persuade the persuadable. The one thing everyone agrees on is that the last 50 years have been a period of growth, not degrowth. In fact, growth has never been faster, except for the 25-year rebuilding period after World War II. The population and economic growth rates of the past half-century are remarkably fast by historical standards. Between 1800 and 1945, for example, the world’s economy grew less than 1.5 percent per year, on average. Between 1970 and 2019, that average increased to almost 3.5 percent.

It's natural to assume that, as this growth continued, every nation’s planetary footprint would only increase. After all, as people become more numerous and prosperous they consume more, and producing all the goods and services they consume uses up resources, takes over ecosystems, and generates pollution. The logic seems ironclad that our gains have to be the environment’s losses.

Easing Pollution, Not Exporting It

In some important areas, however, a very different pattern emerged after 1970: Growth continued, but environmental harm decreased. This decoupling occurred first with pollution, and first in the rich world. In the US, for example, aggregate levels of six common air pollutants have declined by 77 percent, even as gross domestic product increased by 285 percent and population by 60 percent. In the UK, annual tonnage of particulate emissions dropped by more than 75 percent between 1970 and 2016, and of the main polluting chemicals by about 85 percent. Similar gains are common across the highest-income countries.

How were these reductions achieved? The two possibilities are cleanup and offshoring. Either rich countries figured out how to reduce their “air pollution per dollar” so much that overall pollution went down even as their economies grew, or they sent so much of their dirty production overseas that the air at home got cleaner. The first of these paths reduces the total burden of human-caused pollution; the second just rearranges it.

The evidence is overwhelming that rich countries cleaned up their air pollution much more than they outsourced it. For one, a great deal of air pollution comes from highway vehicles and power plants, and rich countries haven’t outsourced driving and generating electricity to low-income ones. In fact, high-income countries haven't even offshored most of their industry. The US and UK both manufacture more than they did 50 years ago (at least until the Covid-19 pandemic sharply reduced output), and Germany has been a net exporter since 2000 while continuing to drive down air pollution. The rest of the world has been exporting its manufacturing pollution to Germany (to use degrowthers’ phrasing), yet Germans are breathing cleaner air than they were 20 years ago.

Rich countries have reduced their air pollution not by embracing degrowth or offshoring, but instead by enacting and enforcing smart regulation. As economists Joseph Shapiro and Reed Walker concluded in a 2018 study about the US, “changes in environmental regulation, rather than changes in productivity and trade, account for most of the emissions reductions.” Research about the cleanup of US waters also concludes that well-designed and enforced regulations have successfully reduced pollution.

It is true that the US and other rich countries now import lots of products from China and other nations with higher pollution levels. But if there were no international trade at all, and rich countries had to rely exclusively on their domestic industries to make everything they consume, they’d still have much cleaner air and water than they did 50 years ago. As a 2004 Advances in Economic Analysis and Policy study summarized: “We find no evidence that domestic production of pollution-intensive goods in the US is being replaced by imports from overseas.”

The rich world’s success at decoupling growth from pollution is an inconvenient fact for degrowthers. Even more inconvenient is China's recent success at doing the same. China’s export-led, manufacturing-heavy economy has been growing at meteoric rates, but between 2013 and 2017 air pollution in densely populated areas declined by more than 30 percent. Here again the government mandated and monitored pollution declines and so decoupled growth from an important category of environmental harm.

Prosperity Bends the Curve

China's progress with air pollution is heartening, but it's not surprising to most economists. It's a clear example of the environmental Kuznets curve (EKC) in action. Named for the economist Simon Kuznets, EKC posits a relationship between a country's affluence and the condition of its environment. As GDP per capita rises from an initial low level, so too does environmental damage; but as affluence continues to increase, the harms level off and then start to decline. The EKC is clearly visible in the pollution histories of today's rich countries, and it's now taking shape in China and elsewhere.

Also consider air pollution death rates around the world. As the invaluable website Our World in Data puts it, “Rates have typically fallen across high-income countries: almost everywhere in Europe, but also in Canada, the United States, Australia, New Zealand, Japan, Israel and South Korea and other countries. But rates have also fallen across upper-middle income countries too, including China and Brazil. In low and lower-middle income countries, rates have increased over this period.”

The EKC is a direct refutation of a core idea of degrowth: that environmental harms must always rise as populations and economies do. It's not surprising that today's degrowth advocates rarely discuss the large reductions in air and water pollution that have accompanied higher prosperity in so many places around the world. Instead, degrowthers now focus heavily on one kind of pollution: greenhouse gas emissions.

The claims made are familiar ones: that any apparent reductions in greenhouse gas emissions in rich countries are due to offshoring rather than actual decarbonization. Thanks to the Global Carbon Project, we can see if this is the case. GCP has calculated “consumption-based emissions” for many countries going back to 1990, taking into account imports and exports, yielding the greenhouse gas emissions embodied in all the goods and services consumed in each country each year.

For several of the world's richest countries, including Germany, Italy, France, the UK, and the US, graphs of consumption-based carbon emissions follow the familiar EKC. The US, for example, has 22reduced its total (not per capita) consumption-based CO2 emissions by more than 13 percent since 2007.

These reductions are not mainly due to enhanced regulation. Instead, they've come about because of a combination of tech progress and market forces. Solar and wind power have become much cheaper in recent years and have displaced coal for electricity generation. Natural gas, which when burned emits fewer greenhouse gases per unit of energy than does coal (even after taking methane leakage into account), has also become much cheaper and more abundant in the US as a result of the fracking revolution.

To ensure that these greenhouse gas declines continue to spread and accelerate, we should apply the lessons we've learned from previous pollution reduction success. In particular, we should make it expensive to emit carbon, then watch the emitters work hard to reduce this expense. The best way to do this is with a carbon dividend, which is a tax on carbon emissions where the revenues are not kept by the government but instead are rebated to people as a dividend. William Nordhaus won the 2018 Nobel Prize in economics in part for his work on the carbon dividend, and an open letter advocating its implementation in the US has been signed by more than 3,500 economists. It's an idea whose time has come.

How We Learned to Lighten Up

Tech progress and price pressure aren't just leading to the demise of coal. They're also causing us to exploit the planet less in many other important ways, even as growth continues. In other words, EKCs are not just about pollution any more.

A good place to start examining this broad phenomenon of getting more from less is US agriculture, where we have decades of data on both outputs—crop tonnage—and the key inputs of cropland, water, and fertilizer. Domestic crop tonnage has risen steadily over the years and in 2015 was more than 55 percent higher than in 1980. Over that same period, though, total water used for irrigation declined by 18 percent, total cropland by more than 7 percent. That is, over that 35-year period, US crop agriculture increased its output by more than half while giving an area of land larger than Indiana back to nature and eventually using a Lake Champlain less water each year. This was not accomplished by increasing fertilizer use; total US fertilizer consumption in 2014 (the most recent year for which data are available) was within 2 percent of its 1980 level.

The three main fertilizers of nitrogen, potassium, and phosphorus (NKP) are an interesting case study. Their total US consumption (once other uses in addition to agriculture are taken into account) has declined by 23 percent since 1980, according to the United States Geological Survey. Yet some within the degrowth movement find ways to argue that these declines are also an illusion. These materials thus serve to clearly illustrate the differences in methodology, evidence, and worldview between ecomodernists like myself and degrowthers.

The USGS tracks annual domestic production, imports, and exports of NKP and uses these figures to calculate “apparent consumption” each year. Consumption of each of the three resources has declined by 16 percent or more from their peaks, which occurred no later than 1998. This seems like a clear and convincing example of dematerialization—getting more output from fewer material inputs.

As I argue in my book More From Less, dematerialization doesn’t happen for any complicated or idiosyncratic reason. It happens because resources cost money that companies would rather not spend, and tech progress keeps opening up new ways to produce more output (like crops) while spending less on material inputs (like fertilizers). Modern digital technologies are so good at helping producers get more from less that they're now allowing the US and other technologically sophisticated countries to use less in total of important materials like NKP.

Forest products provide another clear example of dematerialization in the US. Total annual domestic consumption of paper and paperboard peaked in 1999, and of timber in 2002. Both totals have since declined by more than 20 percent. Could these be mirages caused by offshoring that’s not properly captured? That’s highly unlikely, as the country is now onshoring more than it’s offshoring. The US has been a net exporter of forest products since 2009 and is now the world’s largest exporter of these materials.

Is the US economy also dematerializing its use of metals? Probably, but it’s hard to say for sure. The USGS tallies do show dematerialization in steel, aluminum, copper, and other important metals. But these figures don’t include the metals contained in imports of finished goods like cars and computers. America is a net importer of manufactured goods, so it could be that we’re using more metal year after year, but that much of this consumption is “hidden” from official statistics because of imports of heavy, complex products. However, my estimates indicate that this is extremely unlikely and that the country is in fact now reducing its overall consumption of metals.

Constructing a Weak Argument

Degrowth exponent Jason Hickel responds to this broad evidence of dematerialization by making once again the shopworn argument that there are no real environmental gains; there’s only globalization of harms. Hickel has argued repeatedly that once offshoring is properly taken into account, dematerialization vanishes. How can this be, when tallies take into account imports and exports of raw materials like NKP, timber, and paper? Because, he contends, they don't take into account the true “material footprint” of production around the world.

At this point the degrowth argument departs from reality. I mean literally. As “The Material Footprint of Nations” (the main paper Hickel cites) states, material footprint measures do “not record the actual physical movement of materials within and among countries.” Instead, they’re derived from a “calculation framework [that] … enumerates the link between the beginning of a production chain (where raw materials are extracted from the natural environment) and its end.”

Material footprint models estimate the total weight of all the materials disturbed by humans around the world as they produce the goods they eventually consume. All of the ores mined to make metal, the rock quarried to make gravel, the sand scooped up to make glass and microchips—all of these are estimated by country by year in the material footprint calculation framework.

A nation’s material footprint, then, is always higher than its direct material consumption (DMC). This is straightforward enough. What’s puzzling is that according to “The Material Footprint of Nations,” some rich countries are seeing their footprint go up even as their consumption goes down. The paper shows that many countries are now dematerializing. DMC has been trending downward for some time in the US, UK, and Japan and may recently have peaked for the European Union and OECD as a whole. Yet in all these cases, the material footprint continues to rise.

How can this be? It’s not because the material footprint models do a better job than the USGS of accounting for the metals and other materials in finished goods imports. The technical annex for the global material flows database notes that, as is the case with the USGS tallies, “complex manufactured items are largely excluded.” Instead, the paper notes, “the main reason in most cases was increased indirect use of (dependency on) construction materials.”

This is problematic, because those materials are so poorly tracked. As the appendix states, “Many countries have no data on extraction of non-metallic minerals primarily used for construction … When they are available, they are often unreliable, partial, and underreported.” It’s a poor strategy to use sparse, low-quality data to overturn conclusions based on uniform, high-quality data, yet this is what Hickel is doing when he argues that material footprint calculations show dematerialization is an illusion.

There’s one other serious problem with this argument. It’s based largely on the estimated “raw material equivalents” of Chinese exports of construction minerals, yet China is not at all a big exporter of these minerals. Instead, China’s main exports are electrical and mechanical machinery, plastics, furniture, apparel, and vehicles. None of these contain a lot of sand, gravel, stone, or clay.

So then how do such huge quantities of these and other construction minerals end up somehow being counted among China’s exports? Because China is building a lot of factories, railroads, highways, and other industrial infrastructure each year. The materials footprint calculation framework estimates how much tonnage of construction minerals all this building requires, then allocates about one third of this tonnage to exports. So by this logic, the smartphones and solar panels the US imported from China in, say, 2018 “contain” some of the stone and gravel used to build up China that year. By that same logic, if my neighbors bring me a cake the same year they renovate their house, then my consumption of lumber, drywall, and copper pipe goes up as soon as I have a slice.

Hickel doesn’t stand on any firmer ground when he moves from conclusions to recommendations. He has often claimed that 50 billion tons is the maximum weight of global resource extraction that Earth can sustainably handle and that we’re already well past this limit. In the face of this alleged crisis, he maintains that “the only fail-safe strategy is to impose legally binding caps on resource use and gradually ratchet it back down to safe levels.” However, the paper he cites to support his views contains a frank admission: “There is still no hard scientific evidence of causal relationship between human-induced resource flows and the possible breakdown of life-supporting functions at continental or global scale from which … targets [like a 50 billion ton limit] could directly be derived.” Before taking the unprecedented step of setting up a central resource planning bureaucracy, it doesn’t seem like too much to ask for hard scientific evidence that it’s actually necessary.

Let’s Keep Climbing

Throughout our history, we humans have been climbing a difficult path toward longer, healthier, more prosperous lives. As we climbed that path, we turned the environment around it brown and gray. Our mania for growth was in many ways bad news for the planet we all live on.

Recently, however, we have figured out how to make our path a green one, how to continue to grow while reducing our impact on Earth. The world’s richest countries are also putting more land and water under conservation, reintroducing native species into ecosystems from which they had been hunted into oblivion, and improving Earth in many other ways.

For reasons that I don't understand well, and that I understand less the more evidence I look at, degrowthers want to make us turn around and start walking back down the path, away from higher prosperity. Their vision seems to be one of a centrally planned, ever-deepening recession throughout the rich world for the sake of the environment.

Thanks to Covid-19, we have an inkling of how this would feel. A “degrowth recession” wouldn't have the virus’ deaths and sickness, and it wouldn't require us to practice social distancing. But it would have all the economic contractions’ job losses, business closures, mortgage defaults, and other hardships and uncertainties. And it would have them without end—after all, growth can't be allowed to restart. Corporate and government revenue would decrease permanently, and therefore so would innovation and R&D.

How many of us would be willing to accept all of this in exchange for somewhat less pollution and resource use? To sharpen the question, how many of us would be willing to accept this recession if it wasn’t necessary—if it were clear that we could get environmental improvements while continuing to grow and prosper?

The ecomodernist argument is that that is in fact clear. Unlike the degrowth argument, it's supported by a great deal of evidence. What's at least important is that it will be supported by a great deal of the world's people, who will eagerly sign up to climb our new green path to prosperity.

#### Profit and growth are key to space colonization---extinction.

Kovic '19 [Marko; March 2019; co-founder president of the Zurich Institute of Public Affairs Research; "The future of energy," https://osf.io/preprints/socarxiv/aswz9/download]

Ideally, the mitigation of climate risks will coincide with and contribute to the development of improved or even entirely novel sources of energy that will increase the long-term chances of humankind’s survival by means of space colonization. This is not an unrealistic expectation, given that the mitigation of climate risks consists, to a large degree, of replacing fossil fuels with other, less harmful sources of energy. However, some climate change mitigation strategies might actually harm the long-term prospects of humankind.

First, it is possible that dominant climate change mitigation strategies will actively exclude any form of nuclear energy from the repertoire of climate-friendly energy sources. Existing and experimental (molten salt) fission reactors could play a significant role in replacing carbon-heavy energy sources, but pro-environmental attitudes often overlap with anti-nuclear sentiments [65]. As a result, and in combination with other problems such as large-scale market failures of existing fission reactors (one of the reasons being that generating electricity from fossil fuels is cheaper) [66], nuclear fission does not currently have significant standing as a “cleantech” contribution to climate change mitigation. From a long-term perspective, an unfavorable view of nuclear energy in the context of climate change might mean that technological progress in the areas of nuclear fission and fusion might come to a halt (for example, due to explicit bans or implicit disincentives). If such a scenario came to be, our attempts at colonizing space would almost certainly fail: There are currently no alternatives to fission and fusion, and it is highly improbable that Solar power alone could suffice for sustaining extraterrestrial habitats.

Second, there is some probability that climate change mitigation strategies will change the social order towards a degrowth philosophy. Degrowth is a vague socio-economic concept and social movement that, in general, calls for a contraction of the global and national economies by means of lower production and consumption rates, and, to some degree, to more profound changes to the “capitalist” system of economic production [67]. Degrowth or degrowth-like approaches are being actively considered as climate risk mitigation strategies [68, 69], and degrowth would almost certainly be a highly effective measure for mitigating climate change. After all, if we were to drastically reduce or even completely eliminate the (industrial) sources of greenhouse gases, the amount of greenhouse gases that are being emitted would accordingly drastically sink. From the long-term perspective of humankind’s survival, degrowth is problematic in at least two ways. First, there is a risk that the general contraction of economic activity would also slow or eliminate progress in the domain of energy, which would, in turn, reduce the probability of successful space colonization due to an absence of suitable energy sources. Second, and more fundamental: If degrowth were to become a dominant societal paradigm, it is uncertain whether the long-term survival of humankind by means of space colonization would be regarded a desirable goal. In a literal sense, establishing extraterrestrial colonies would mean growth; the size of the total human population would grow, and the area of space-time that humans occupy would grow.

In a more philosophical sense, degrowth might even be antithetical to space colonization. Even though both degrowth and space colonization have a similar moral goal – increasing wellbeing – , the ends to that goal are very different. Within degrowth philosophy, the goal is, metaphorically speaking, not to “live beyond our means”: We should strive for “ecological balance”, and such a state should increase the average wellbeing. But the frame of reference is the status quo; Earth and humankind as we know it today. Space colonization, on the other hand, operates with a much larger frame of reference: All the future generations of humans (and other sentient beings) who could enjoy wellbeing if we succeed in colonizing space – and who will categorically be denied that wellbeing if we fail to colonize space [70]. The goal of space colonization as a moral project is not to live beyond our means, but to actively redefine and expand what our means are through scientific and technological progress.

#### Space mining is booming, and U.S. companies are leading the charge.

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These new space initiatives have also served to change U. S. regulators views on how to control, license and encourage commercial space innovation. Various “space acts” passed by Congress and signed into law have by and large served to encourage new commercial space enterprise. Today the U. S. Federal Aviation Administration Office of Commercial Space Transportation (FAA-AST) serves a dual role of regulator of commercial space safety as well as encourager of new space enterprises. Today NASA also relies on commercial vehicles to access the International Space Station and have awarded contracts for new vehicles and capsules to take astronauts into and return from space. Commercial ventures have developed spaceplanes to provide suborbital tourist experiences. Commercial vehicles are now being developed to place satellites and even people into space as well as to deploy private space habitats. Robotic systems are being developed to refuel and service spacecraft and even actively deorbit space debris. Some of these systems could even be deployed as anti-satellite weapons. Also, the U. S. Department of Defense and especially its Defense Advanced Research Projects Agency (DARPA) plays a key role in developing new capabilities in space, frequently in partnership with private space ventures. This dramatic shift in the division between private and public space programs and the rapid rise of private space systems to carry out activities that are sometimes called new space activities has been driven first and foremost in the United States. This chapter explores the many new space programs that have been started—largely by entrepreneurial and startup aerospace companies in the United States in the last 15 years. It then proceeds to examine the various new space enterprises that are being formed to pursue space mining and the recovery of natural resources from space. Finally this analysis covers the planned course of action plus the ambitious goals and objectives of new U. S. space ventures. It covers their efforts to create a flexible partnership with U. S. governmental space agencies as well as to forge an open and permissive regulatory structure for their operations. Their plans seek for them to be able to proceed with a minimum of regulatory oversight, with few restrictions other than for the safety of their operations and with very liberal interpretation of existing space law, treaties and conventions. The Rapid Growth of New Space Activities in the United States Several U. S. entrepreneurs are developing new space ventures with the goal of carrying out space mining as soon as within another decade. These American space entrepreneurs strongly believe that the private sector will play a major role in new space initiatives, and they are intent on being the pioneers that make this actually happen. They are advocating private enterprise take the lead and are correspondingly advocating a limited role for government. A number of these individuals and their companies have in the past strongly supported active involvement of the private sector in other space activities. These space and “protospace” ventures have included such activities as zero g flights, suborbital “space tourism” flights, stratospheric balloon flights, high altitude platform systems for various applications, and private astronaut flights to space habitats and the International Space Station. Their latest initiatives to pursue private ventures aimed at the exploitation of space’s natural resources is very much a logical thought extension of their earlier efforts to “privatize” space activities. In the short to medium term, those private actors may not be able to mount a completely comprehensive effort to provide all the needed space exploration and exploitation technologies to cover all aspects of a space mining enterprise. They have therefore sought to get the U. S. government to help them develop new capabilities. They have first worked to create new mechanisms such as the Commercial Spaceflight Federation (CSF) to strengthen their voice. They have encouraged NASA and the FAAAST to sponsor contests and put up prize money to stimulate new commercial space competency. Their aspiration is to do as much of these new space activities—such as space mining and space transportation—as soon as possible via commercial mechanisms and with the minimum amount of governmental involvement and regulation. Despite these aspirations there is some recognition on their part that cooperative relationships with governmental space agencies, research agencies, and national and international regulatory bodies may still be necessary. They understand that the substantial costs, the need for certain technilogical capabilities, risk management, and international regulatory controls may ultimately require governmental cooperation at the national level as well as in the international space governance arena. However, in the United States—and the phenomenon is currently largely limited to this country—the role and voice of these new space entrepreneurs and their various space mining ventures are increasing heard within Congress and the U. S. federal government—at least when it comes to governmental space policy. These individuals and associated new space businesses often have access to substantial amounts of financial capital and in various ways have had a remarkable impact on recent space policies adopted by the government. In short they have impacted the mind set of congressional legislators and staff as well as various Executive Branch and even local state officials. Just a few of the most recent privately led initiatives are the X-Prize (to build a private, reusable spaceship that will herald a new era in commercial spaceflight); 1 the Google Lunar X Prize (to send a robot to the Moon and perform a series of tasks; the SpaceX project (to develop the first private sector launcher)2 ; and, the Bigelow Aerospace project (which has deployed an inflatable module in low Earth orbit thatcould become the space habitat of the future).3 And NASA and the FAA have been increasingly supportive of new private space initiatives. NASA, for instance, created a venture with RedPlanet Capital (with an investment of $75 million) at the end of 2006 to develop technology that could help the agency to send missions to Mars. The aim was to find companies whose technologies could also represent significant breakthroughs on Earth, as well as in the heavens.4 NASA has also embarked on a series of prize competitions to develop new technologies for Moon and Mars landings and even to develop the capabilities to design and build space elevators.5 NASA has sought in the past decade to develop new commercial rockets to resupply the International Space Station. The first step was to develop commercial resupply vehicles. The first commercial competition started in 2006 with awards to SpaceX and Kistler Aerospace. When Kistler was not able to meet performance deadlines NASA shifted the award to Orbital Sciences (now Orbital ATK). This effort to develop a commercial orbital transportation service evolved into a NASA program to create a commercial capsule and launchers that are being developed by SpaceX and Boeing under two multi-billion-dollar contracts.6 The FAA Office of Commercial Space Transport has created under congressional guidance regulatory processes for granting experimental licenses for commercial suborbital flights that has been in many ways quite flexible. Even more significant is that FAA-AST has licensed a growing number of commercial spaceports in the United States. The number of commercial spaceports that have been licensed in the United States (plus those currently pending license approval) far outnumber the commercial spaceports in the rest of the world by a wide margin. Figure 6.1 shows in blue dots the commercial spaceports fully licensed plus indicates the states where about a dozen spaceports are pending license approvals.7 The number of commercial launches that have been approved under experimental licenses by the FAA is now quite significant and also rapidly increasing. Thus not only are there many more commercial spaceports, but there have been far more commercial launches in the United States than anywhere else in the world. Table 6.1 below provides a listing of experimental licenses given to commercial launch developers between 2008 and 2015. Beyond this list of actual launches under experimental licenses there are more than a dozen other U. S. companies that are at various stages of developing commercial launchers or spaceplanes. Thus there may be a large increase in commercial launches under experimental licenses in the 2016–2018 timeframe. The wide range of U. S. commercial space activities since 2000 has included development of high-altitude platform systems, stratospheric balloon systems, spaceplanes for suborbital flights, and commercial launchers capable of achieving low Earth orbit and beyond. These new space ventures are an extension of commercial space activities in telecommunications, remote sensing, and satellite navigation. Today there are emerging new commercial space industries such as on-orbit servicing, on-orbit refueling and retrofitting of satellites, and even commercial monitoring and active removal of space debris that are also predominately U. S.-based efforts as well. These latest efforts have been supported not only by NASA and the FAA-AST, but very prominently promoted by the Defense Advanced Research Projects Agency (DARPA). DARPA projects, such as Orbital Express8 and Project Phoenix9 , as well as joint development projects with NASA are heavily dependent on aerospace contractors. These initiatives to develop private and more cost effective commercial launchers, to develop in-orbit robotic capabilities to refuel and service satellites, as well as other new commercial systems to maneuver remotely and precisely in space are all useful precursor technologies that could lead the way to future commercial space mining activities. Already several U. S.-based space mining activities and private asteroid tracking activities have been organized. Planetary Resources On April 24, 2012, Planetary Resources10 became the first private enterprise to enter into the realm of private space business directly dealing with the quest for natural resources in of space. The vision of the company is as follows: “Planetary Resources is bringing the natural resources of space within humanity’s economic sphere of influence, propelling our future into the twenty-first century and beyond. Water from asteroids will fuel the in-space economy, and rare metals will increase Earth’s GDP.”11 The company wants to develop a low-cost robotic spacecraft to explore the estimated 9000 NEAs for potential resource extraction and utilization.12 According to Peter Diamandis, the founder and co-chairman of Planetary Resources, “Many of the scarce metals and minerals on Earth are in near-infinite quantities in space. As access to these materials increases, not only will the cost of everything from microelectronics to energy storage be reduced, but new applications for these abundant elements will result in important and novel applications.”13 Eric Anderson, co-founder and co-chairman of the company, has also indicated that the first targets for exploration will be water-containing asteroids. “Water is perhaps the most valuable resource in space. Accessing a water-rich asteroid will greatly enable the large-scale exploration of the Solar System. In addition to supporting life, water will also be separated into oxygen and hydrogen for breathable air and rocket propellant.”14 The company has begun a detailed exercise to identify potential candidate NEAs that could be reached without excessively high thrust impulse and would potentially contain natural resources of significant value. Its website includes a listing of dozens of potential target asteroids. It has also created a process where amateur astronomers and scientists can add information to their database. To the uninitiated this might seem like a straightforward and not too complicated exercise, but in fact it is a major challenge. It is estimated that there may be a million NEAs that are 30 m or more in diameter. In Chap. 4 the many types of orbits that these NEAs travel in and the difficulty in locating and assessing their resource content was discussed. However, this asteroid identification process is now actively underway by PRI. When the best “goldilocks” NEA candidate is identified—i.e., an asteroid that has the best resource content and in an orbit that would be not too difficult to access and mine, then Planetary Resources intends to launch its first asteroid-hunting spacecraft on a reconnaissance mission (Fig. 6.2). Currently the company is concentrating on the idea of creating small 3D-printed lowcost spacecraft to serve as the explorerprospecting units that could fly close enough to an NEA to assess whether it is indeed a prime candidate for space mining.15 Deep Space Industries On January 22, 2013, a second U. S.-based company, Deep Space Industries (DSI), entered the race of asteroid surveying and resource extraction.16 The company intends to develop a fleet of three spacecraft using off-the-shelf technology to survey small NEAs.17 It hopes to attract $13 million in capital over the next few years.18 The Deep Space Industries website proclaims: Our mission is a daring one. We are journeying to unknown frontiers, and pushing the limits of technology to provide a brighter future for all mankind.” Essentially, DSI is suggesting that there is great wealth in our Solar System and that their vision is to help bring that wealth back to Earth. They anticipate the following progression. After prospecting missions have identified asteroids with concentrated volatiles (such as water and hydrocarbons) and other materials of interest, Deep Space will begin collection with specialized robotic spacecraft. Deep Space thus describes its activities as a four-step progression that begins with prospecting, moves on to harvesting, then processing, and finally manufacturing. The aspirations of the company are far from small in scope. It has proclaimed that this will be the biggest industrial transformation in human history. (See https:// deepspaceindustries.com/business/.) To commence its activities, the company plans to send “asteroid-prospecting spacecraft” into outer space with the launch of the first of its 25-kg “FireFlies” spacecraft. This will be followed by the heavier “DragonFlies” that will go on mission and bring back samples. Deep Space Industries has trademarked the name Mothership™. This refers to the concept of a larger carrier spacecraft designed to aid in the delivery of nano satellites to deep space targets. After deploying the nanosats, the spacecraft remains as a high bandwidth communication relay between the deployed craft and Earth. One of the elements needing clarification is whether DSI sees its mission as mining asteroids or whether it also has aspirations to carry out mining on the Moon (Fig. 6.3).19 DSI has suggested that a spacecraft might capture an asteroid and reposition it in an orbit near Earth for potential harvesting of resources. In this concept there is significant reliance on solar power systems, but in other more conventional concepts, more proven chemical propulsion is envisioned. In press statements DSI has indicated that even a small asteroid might ultimately be valued at up to $195 billion. This would represent, however, an extreme case of an NEA that is almost pure platinum. 20

#### Space mining is vital to solve biod loss and resource shortages, particularly REMs.

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Coping with the Scale and Complexity Problem The land area of the entire world is 148.94 million sq. km (or 57.506 million sq. miles), and its water area is 361.132 million sq. km (or 139.434 million sq. miles). About half of that land area is truly viable for year- round habitation when one eliminates most parts of Antarctica, the Arctic north, Siberia, the most dangerous mountain ranges and the most arid desert regions. Rising sea levels will further decrease available land areas. When one divides about 75 million sq. km by 10 billion people (or about 133 people people/sq. km) it becomes clear that rising global population and shrinking land areas and exhaustion of many types of natural resources—especially potable water— will be a growing problem.7 Figure 2.2 shows the volume of water in the world in comparison to the total volume of Earth. This graphic helps us to realize just how small the amount of potable water that is truly accessible today in comparison to a rising global population actually is. Figure 2.2 underscores the issue of just how difficult it will be to continue to provide key resources especially to major urban centers as global population continues to grow. And this is not just a question of sustaining human needs for water and natural resources. It is also a matter of sustaining endangered species of flora and fauna. The United Nations had done an analysis that shows the loss of species since 1800 and projections for the future show a very disturbing trend.8 The graphs in Fig. 2.3 that come from the U. S. Geological Survey seem to show a relationship between the rapid growth of the global human population in recent times and the increasing rate of extinction on species. The future availability of petroleum products and water is most often mentioned in studies of future resource scarcity, but broader studies have shown that the world by the mid twenty-first century will have many shortages. The following results from a detailed Global Nonrenewal Natural Resources (NNR) study came up with the following results, as shown in Fig. 2.1. 9 Although these results might vary somewhat from year to year based on economic downturns or upturns, the overall trend toward increasing shortages is clear. The upward mobility of the populations in China, India, Indonesia, and other newly industrialized companies suggest that up to three times more consumer demand for products and energy will be present by the middle of the twenty-first century. Only recycling and new energy sources can meet the great bulk of this burgeoning demand. Meeting the demand for natural resources has been identified as a problem by many that have researched this problem. The projections of shortages in the future are presented in Fig. 2.4 and in even greater detail in Fig. 2.5 are certainly of concern. As Chris Clugston’s detailed analysis of this subject has concluded: “Global Non Renewable Natural Resource (NNR) scarcity will intensify going forward, as global economic activity levels, economic growth rates, and corresponding NNR demand return to their pre-recession levels; and global NNR supply levels continue to approach and reach their geological limits.” Yet the prospect of space mining can provide new options. A modest nearEarth asteroid rich in platinum, approximately spherical in shape and 30 m in diameter would constitute a volume of 4500 cu. m and represent a mass of perhaps 5000 metric tons. If one assumed that this asteroid was 50% platinum, then its value at current world market prices would be on the order of $90 billion. Even if the asteroid recovery mission and refinement costs ran to $5 billion and even if some of the proceeds were to go into some sort of global commons development or ecological fund, just a single such mission would produce many billions of dollars in profits. This may represent an extreme example, but there are over a million PHAs that are on the order of 30 m. The key in the early days of space mining would be to identify high-value targets. A 50-m PHA would be over 4.6 times more massive in volume and content and would be incredibly valuable if it contained precious metals or rare earth materials such as iridium, rhodium, ruthenium, palladium, or osmium. In contrast, the economics would be much more difficult in the case of PHAs with less valuable natural resource contents. An asteroid with 70% nickel and molybdenum content and 50 m in diameter would have something like a market value of only about $200 million based on current market prices of $13,000 a metric ton for molybdenum and $10,000 a metric ton for nickel. This much lower valuation would call for space mining transport equipment of the longer term future that could be used over and over again. It would also likely mean systems that ran off of solar and electric propulsion systems.

#### Resource scarcity will drive a global conflict explosion.

Klare 13 – Michael T. Klare, Defense Correspondent for *The Nation*, Professor emeritus of peace and world-security studies at Hampshire College, senior visiting fellow at the Arms Control Association in Washington, DC, 2013 (“How Resource Scarcity and Climate Change Could Produce a Global Explosion,” *The Nation*, April 22nd, Available Online at <https://www.thenation.com/article/how-resource-scarcity-and-climate-change-could-produce-global-explosion/>, Accessed 8-20-19)

Brace yourself. You may not be able to tell yet, but according to global experts and the US intelligence community, the earth is already shifting under you. Whether you know it or not, you’re on a new planet, a resource-shock world of a sort humanity has never before experienced. Two nightmare scenarios—a global scarcity of vital resources and the onset of extreme climate change—are already beginning to converge and in the coming decades are likely to produce a tidal wave of unrest, rebellion, competition and conflict. Just what this tsunami of disaster will look like may, as yet, be hard to discern, but experts warn of “water wars” over contested river systems, global food riots sparked by soaring prices for life’s basics, mass migrations of climate refugees (with resulting anti-migrant violence) and the breakdown of social order or the collapse of states. At first, such mayhem is likely to arise largely in Africa, Central Asia and other areas of the underdeveloped South, but in time, all regions of the planet will be affected.

#### Goes nuclear

**Wooldridge 9** – political writer and former lecturer at Cornell University (Frosty, “Humanity galloping toward its greatest crisis in the 21st century”

http://www.australia.to/index.php?option=com\_content&view=article&id=10042:humanity-galloping-toward-its-greatest-crisis-in-the-21st-century&catid=125:frosty-wooldridge&Itemid=244)

It is clear that most politicians and most citizens do not recognize that returning to “more of the same” is a recipe for promoting the first collapse of a global civilization. The required changes in energy technology, which would benefit not only the environment but also national security, public health, and the economy, would demand a World War II type mobilization -- and even that might not prevent a global climate disaster. Without transitioning away from use of fossil fuels, humanity will move further into an era of resource wars (remember, Africom has been added to the Pentagon’s structure -- and China has noticed), clearly with intent to protect US “interests” in petroleum reserves. The consequences of more resource wars, many likely triggered over water supplies stressed by climate disruption, are likely to include increased unrest in poor nations, a proliferation of weapons of mass destruction, widening inequity within and between nations, and in the worst (and not unlikely) case, a nuclear war ending civilization.

#### Space mining causes prolific innovation with huge terrestrial implications.

\*robotics, space navigation and maneuvering, situational awareness, energe efficiency, and cheap satellites + space travel

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But the space mining industry can also aid in producing and perfecting new technologies that could assist with other types of space missions, or produce innovations that can find useful implementation right here on Earth. Space mining activities will be seeking to develop new and more cost effective robotics missions, advanced navigation and precision maneuvering in space, improved space situational systems, lower cost satellite manufacturing techniques, and improved power systems, including higher efficiency photovoltaic cells and quantum dot technology.

Of course the most important contribution could well be more cost effective space transportation systems such as solar-powered electric propulsion systems. If one could develop transport systems that are largely multi-use that can be used over and over again, they could also be employed to boost cost effective solar power satellites into orbit.

Likewise if space mining enterprises can develop low cost satellites that could produce at lower cost and in high volume via 3-D printing, such as Planetary Resources is now developing, this could be quite significant. Such techniques could also find application in communications, precision satellite navigation, and remote sensing constellations and on other space missions. Clearly low cost remote surveying and reconnaissance satellites are currently the top priority for space mining ventures, and Fig. 2.6 shows the prototype small satellite that Planetary Resources Inc. together with 3D Systems is currently developing. This Arkyd-300[3] satellite bus configuration as pictured below with its efficient torus shape holds the propellant and provides the structure for the satellite. The fact that the satellite can be “manufactured” via 3D printing, of course, greatly reduces its production cost. One of the characteristics of the new space mining companies is that they have typically recruited partners that can help them develop these new types of technology. They have also been skillful in winning contracts from NASA for research and development work.11

#### No market complexity or financialization.

Hung Tran 19, nonresident senior fellow with the Atlantic Council and a former executive managing director of the Institute of International Finance, with; Jaime Caruana, former general manager at Bank for International Settlements, is a member of the board of directors at BBVA, 4/9/19, “Diversity builds financial resilience,” https://www.atlanticcouncil.org/blogs/new-atlanticist/diversity-builds-financial-resilience/

The diversity of financial institutions, with their differences in business models, liability structures, time horizons, and investment motivations could contribute greatly to financial resilience. Since the 2008 crisis, financial institutional diversity has helped sustain market liquidity while banks have curtailed their market-making activity [a readiness to buy and sell securities to accommodate their clients] due to regulatory changes and business strategies. Improving resiliency and liquidity in financial markets is critical to better finance the real economy, allocate risks properly, and support financial stability.

Many financial institutions and practices, together with regulatory and accounting requirements, however, tend to exacerbate cyclical fluctuations in the economy by buying assets or extending credit in good times and cutting back in bad times. It is important, therefore, to promote financial diversity and foster counter-cyclical behaviors among institutions capable of doing so. This helps reduce the risk of market imbalances leading to liquidity crises and offset self-reinforcing dynamics in times of financial stress. This risk has become important to guard against as the International Monetary Fund’s just-released World Economic Outlook finds the global economy entering a synchronized slowing phase.

The idea is to exploit the natural differences in the balance sheet structures of financial institutions like banks and investment funds on the one hand, and insurance companies and pension funds on the other, and develop regulatory and accounting regimes that encourage diversity of behaviors.

Banks and investment funds have a positive duration gap in their balance sheets—meaning the average duration of their assets tends to be longer than that of their liabilities. Consequently, banks and investment funds tend to act in a pro-cyclical manner. When asset quality deteriorates, prices fall, and interest rates rise, the value of banks’ assets declines by more than that of their liabilities. Regulatory capital and liquidity requirements increase under those circumstances, pressuring banks to liquidate falling assets.

Investment funds can sell into falling markets to meet redemption demand, according to research by the Bank for International Settlements. Funds can also buy and sell at the same time if they use similar investment strategies, sharing economic and market views.

The pro-cyclical practices described above can be ameliorated to some extent by regulations requiring higher capital and liquidity ratios for banks as well as heightened liquidity risk management. Better capitalized banks with sufficient liquidity can arguably contribute less, but more reliable, market liquidity—compared with the very liquid pre-crisis market conditions driven by high leverage, which turned out to be illusionary. Funds can also maintain adequate cash positions to meet possible redemption demand. In any event, pro-cyclicality remains a natural tendency for those institutions and needs to be managed.

By contrast, insurance companies and pension funds have a negative duration gap in their balance sheets and, under some circumstances, could play a stabilizing role in mitigating selling pressure. As their average asset duration is much shorter than that of their liabilities, when rates rise, the value of their assets fall by less than that of their liabilities. This strengthens their solvency, allowing them to acquire assets having fallen in prices. They thus can act in a counter-cyclical manner. However, some research indicates that this counter-cyclical behavior may need to be further supported. The International Monetary Fund’s Global Financial Stability Report observed that life insurance companies—but not property and casualty insurers—and pension funds act counter-cyclically in liquidity crises, but pro-cyclically in solvency crises.

More recent empirical research, using recently available granular data on security-by-security holdings by EU institutional investors, shows that their behavior is more nuanced. Overall, insurers and pension funds behaved in a counter-cyclical manner, but the intensity of such effect has weakened since the pre-crisis period. Other preliminary research notes that the counter-cyclical behavior of insurers and pension funds can be observed for safe assets whose value can be discounted by the same risk-free rate used for liabilities. However, these institutions tend to pro-cyclically reduce holding of risk assets, including equities and corporate bonds, as their values tend to fall by more than liabilities in a market correction.

Regulators should encourage insurers and pension funds to make more use of the counter-cyclical measures provided in the EU insurance regulatory regime Solvency II—as highlighted by the European Insurance and Occupational Pension Authority. While interventions by government authorities are necessary to stabilize severe financial turmoil, more counter-cyclical behaviors by insurers and pension funds, many of which likely stay resilient in a crisis, can help reduce the frequency and severity of financial crises. Remember: during the Great Depression in the United States and its aftermath, some 7,000 banks failed but most of the insurers remained financially healthy.

#### Growth and innovation solves warming.

Ogutonye, 21—Policy Lead, Science & Innovation Unit, Tony Blair Institute for Global Change (Olamide, “Should Tech Make Us Optimistic About Climate Change?,” <https://institute.global/policy/should-tech-make-us-optimistic-about-climate-change>, dml)

In the middle of a climate emergency, it is challenging to stay upbeat. Yet the good news is that investment in climate technology has continued to grow since the early 2010s. US-listed companies involved with providing technology solutions that support global decarbonisation have consistently outperformed the average since 2019 (Figure 7). Venture capital (VC) investment in the sector grew tenfold between 2013 and 2018, representing five times the growth rate of the overall VC market. By comparison, the growth rate of VC investment in Artificial Intelligence was a third of climate tech between 2013 and 2018 although AI is renowned for its uptick within the same timeframe. Beyond VC, public investment in climate technology research has continued to grow too. In 2019, government research and development funding for energy technologies alone stood at $30 billion, with around 80 per cent of it aimed at low-carbon solutions.

In addition to the positive role of technology, political leaders are increasingly showing a willingness to make ambitious commitments on climate. The Paris Agreement is a case in point. The international treaty was adopted in 2015 and ratified internationally within a year – a much quicker pace than its predecessor, the Kyoto Protocol, which took eight years. The Paris deal grew into a political snowball, galvanising further commitment from most of the world’s leading emitters and arguably becoming the most symbolic climate event of the 21st century. The US withdrawal from the Paris Agreement in 2019 dealt a political blow to the global pact although the decision, since reversed by President Biden, did not resonate or last long enough to have any major impact.

The Biden-Harris administration has already indicated that it will not sit on the fence but will instead revive the country’s leadership on climate action. In the UK and elsewhere, similar efforts can be observed as more countries commit to some form of net zero target. More than 100 countries have pledged a commitment towards net zero, with estimates suggesting that over 70 per cent of global GDP and 55 per cent of CO2 emissions are now covered by a similar target. A Climate Action Tracker Report indicates that the cumulative effect of countries’ pledges to the Paris Agreement – if kept and fully achieved – could keep global temperature rise below 2.1°C by 2100, putting the stated goal of 1.5°C within striking distance.

As explored in our recent Institute paper, there are also important insights for politicians in terms of applying lessons from the Covid-19 pandemic to the climate emergency. Although the pandemic is different in scale, complexity and timeline, it offers an immediate window into how policy leaders can adapt and make decisions in order to better support climate innovation. Countries can also apply the “recovering better together” principles outlined by the UN, which calls for a commitment to climate-related actions as economies recover from the Covid-19 slowdown. More than 60 countries, including high emitters, are already making an explicit promise to link their nationally determined contributions (NDC) to Covid-19 recovery, supported by the United Nations Development Programme’s Climate Promise programme. Countries in the Global South are equally aligning their climate mission with international support for various NDC support programmes. A green recovery can cut the level of 2030 emissions to 25 per cent lower than projections based on pre-Covid commitments and put the world close to a 2°C pathway. The pandemic has also highlighted the significance of tech innovation, not least in record-breaking vaccine delivery but also in the suite of digital solutions developed for contact tracing, compliance monitoring and management of health-care records.

The global financial landscape is evolving to become more responsive to climate innovation. Since they were first issued in 2007, green bonds have grown into what is now estimated to become a $1 trillion market. Analysts expect as much as $500 billion of green bonds this year as the EU raises capital for its Covid recovery fund. From target-linked to transition bonds, innovations in this green market are being used to bring projects in energy, transport, buildings and other economic sectors to life. Investor-led initiatives such as Climate Action 100+, whose members control over $50 trillion of assets, are actively using funds to ensure the world’s largest corporate greenhouse gas emitters commit to climate action. Other investor networks are pursuing a similar agenda, including Europe’s Institutional Investors Group on Climate Change (IIGCC) and Australia and New Zealand’s Investor Group on Climate Change (IGCC). Humanity’s competence in technology and innovation will be central to the race in mitigating and tackling climate change.

#### The overall environment is resilient---‘existential’ threats are false

Ronald Bailey 20, Science Correspondent at Reason, Member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, “The Global Environmental Apocalypse Has Been Canceled”, Reason Magazine, 8/1/2020, <https://reason.com/2020/08/01/the-global-environmental-apocalypse-has-been-canceled/> [grammar edit]

According to these activists and politicians, humanity is beset on all sides by catastrophes that could kill off civilization, and maybe even our species. Are they right?

Absolutely not, answers the longtime environmental activist Michael Shellenberger in an engaging new book, Apocalypse Never: Why Environmental Alarmism Hurts Us All. "Much of what people are being told about the environment, including the climate, is wrong, and we desperately need to get it right," he writes. "I decided to write Apocalypse Never after getting fed up with the exaggeration, alarmism, and extremism that are the enemy of positive, humanistic, and rational environmentalism." While fully acknowledging that significant global environmental problems exist, Shellenberger argues that they do not constitute inexorable existential threats. Economic growth and technological progress, he says, can ameliorate them.

Shellenberger's analysis relies on largely uncontroversial mainstream science, including reports from the Intergovernmental Panel on Climate Change (IPCC) and the Food and Agriculture Organization. And as a longstanding activist, Shellenberger is in a good position to parse the motives behind the purveyors of doom.

Shellenberger's activism is the real deal. To raise a donation to the Rainforest Action Network, he charged his friends $5 to attend his 16th birthday party. At 17 he went to Nicaragua to experience the Sandinista revolution. In the 1990s he worked with the Landless Workers' Movement in Brazil.

In 2003, Shellenberger and allies launched the New Apollo Project to jumpstart a no-carbon energy revolution over the next 10 years. In 2008, Time named him "A Hero of the Environment." He co-founded the ecomodernist Breakthrough Institute, which advocates the use of advanced technologies such as nuclear power and agricultural biotechnology to decouple the economy from the ecology, allowing both humanity and the natural world to flourish. More recently, he founded Environmental Progress, which campaigns for, among other things, the deployment of clean modern nuclear power. He is an invited expert reviewer of the Intergovernmental Panel on Climate Change's next assessment report.

Ohio Passes Controversial Conscience Clause for Doctors

So what does he say about climate change? "On behalf of environmentalists everywhere, I would like to formally apologize for the climate scare we created over the last 30 years," he wrote in an essay to promote his new book. "Climate change is happening. It's just not the end of the world. It's not even our most serious environmental problem." Needless to say, there are environmentalists everywhere who do not believe they have anything to apologize for. A group of six researchers assembled by the widely respected Climate Feedback fact-checking consortium rated his article as having low scientific credibility.

Shellenberger doesn't devote much of Apocalypse Never to the science behind man-made climate change. He basically accepts the consensus that it's a significant problem and instead focuses on various claims about the harms it is supposedly already causing. In that promotional essay, he argues that (1) human[s] being are not causing a "sixth mass extinction," (2) the Amazon rainforests are not the "lungs of the world," (3) climate change is not making natural disasters worse, and (4) fires have declined 25 percent around the world since 2003.

Shellenberger isn't denying the reality of man-made climate change. He's arguing that humanity is already adapting to the ways climate change has been making weather patterns evolve, and that we will continue to adapt successfully in the future. His book is ultimately a sustained argument that poverty is world's most important environmental problem, and that rising prosperity and increasing technological prowess will ameliorate or reverse most deleterious environmental trends.

#### Decoupling implodes stability in every global hotspot AND throughout Asia.

Ali Wyne 18, Policy Analyst at the RAND Corporation, MPP in International and Global Affairs from the John F. Kennedy School of Government at Harvard University, BS in Political Science from MIT, Former Researcher at the Council on Foreign Relations, “The Security Risks of a Trade War With China”, Foreign Affairs, 8/6/2018, https://www.foreignaffairs.com/articles/china/2018-08-06/security-risks-trade-war-china

Trade tensions between the United States and China continue to rise. In June, U.S. President Donald Trump’s administration announced that it would impose tariffs of 25 percent on $50 billion worth of Chinese exports, with the first wave targeting some 800 goods worth $34 billion. China pushed back with its own set of tariffs targeting the U.S. agricultural sector and industrial heartland. In response, Trump has reportedly ordered his administration to consider a 25 percent tariff on an additional $200 billion worth of Chinese exports. As the showdown escalates, many observers are understandably focused on the potential for a full-fledged trade war that could destabilize the world economy. But they should also consider second-order, longer-term implications—in the security realm. Up until recently, the two nations’ economic ties had served as an effective brake on escalating strategic distrust. A China less constrained by and invested in economic ties with the United States could pose a substantially greater challenge to U.S. foreign policy. For all the Trump administration’s frustrations with managing interdependence, the consequences of decoupling could mean even bigger headaches.

THE ROOTS OF TRADE TENSIONS

The United States buys more exports of Chinese goods than any other country. China, meanwhile, is the United States’ largest trading partner and the fastest-growing market for its exports. Yet neither side considers these deep, multifaceted trade links an unalloyed plus.

Trump often expresses irritation over the size of the U.S. trade deficit with China, but trade tensions between the two countries are rooted less in deficit figures than in high-tech competition. The United States sees China’s technological progress as a growing national security challenge. One of Trump’s top economic advisers, Peter Navarro, warned recently that “China’s investment in strategic technologies may ultimately pose the gravest danger to America’s manufacturing and defense industrial base.” He argued that “tariffs will form a critical line of defense against predatory trade practices China has used to the detriment of American industries.”

China, meanwhile, seeks to become a global leader in advanced manufacturing. Its Made in China 2025 initiative prioritizes ten industries—including information technology, aerospace equipment, and new materials—and aims to raise the domestically produced share of “basic core components and important basic materials” used in China to 40 percent by 2020 and 70 percent by 2025.

As seen with the case of ZTE—until recently China’s second-largest telecommunications equipment maker—Beijing depends heavily on Washington for high-tech inputs. In mid-April, the U.S. Commerce Department issued an order banning companies from selling parts to ZTE for seven years. Although the justification was that ZTE had circumvented U.S. sanctions on Iran and North Korea, the more fundamental concern was that the company could use U.S. technology to engage in espionage or even conduct cyberattacks against Washington. Without chips from Qualcomm and Intel and optical components from Acacia and Lumentum, ZTE could not function, and in early May it announced it had ceased “major operating activities.” A few days later, Trump said he was working with Chinese President Xi Jinping to rescue the company, prompting the Commerce Department to soften its earlier decree, but a bipartisan group in Congress urged the agency to stick with its original order, barring firms from doing any business with ZTE through 2025.

Although the company has just received a lifeline—the U.S. Senate passed a $716 billion defense appropriations bill last week that omitted an amendment introduced by Senator Marco Rubio (R-Fla.) and his Democratic colleague Chris Van Hollen (D-Md.) to reinstate Commerce’s ban on ZTE—Chinese leaders are increasingly convinced that Beijing will not be able to realize its full economic potential unless it becomes more self-reliant. China already saw the currency crisis that rattled the Asia-Pacific in the late 1990s and the global financial crisis that erupted a decade later as evidence that it needed to diversify away from U.S. consumption. Until recently, though, Beijing was primarily looking to shore up its own domestic resilience, and to do so by unwinding its embrace of Washington over time. Now China may seek a more rapid decoupling, less for economic reasons than for strategic ones. The country’s leaders believe that extant U.S. leverage over its economy could thwart the ambitions it has set out in Made in China 2025, which a ranking Communist Party official recently called “the guarantor” of China’s “sovereignty and prosperity.”

In late April, Xi stated that in “the next step of tackling technology, we must cast aside illusions and rely on ourselves.” His conclusion parallels that of Trump, who believes that the United States has eroded its competitiveness by buttressing the postwar order and joining multilateral trade agreements. The New York Times posits that this alignment of views may presage “a time when the economic engines of China and the United States are not so closely linked, particularly in high-tech industries.” A loosening of those links would have not only economic implications but also security ones.

A MORE REVISIONIST BEIJING?

There are few factors, after all, besides trade interdependence that compel the two countries to exercise mutual restraint and carry on multifaceted cooperation. The United States is a young, racially diverse democracy whose self-conception is molded anew by each wave of immigrants; China is a five-millennia-old, predominantly ethnic Han civilization that clings to a largely immutable identity. The two countries have markedly different, sometimes explicitly antithetical, perspectives on domestic governance and foreign policy—divergences amplified by each one’s insistence upon its own exceptionalism. Absent economic interdependence, U.S.-Chinese ties may well have grown more strained, if not antagonistic, over the past four decades.

In the long run, a China economically decoupled from the United States could scale back existing bilateral cooperation and take a more overtly revisionist attitude toward the postwar order. The Council on Foreign Relations’ Elizabeth Economy explains in her new book that Xi “is ambitious to lead but embraces globalization insofar as it controls the flow of ideas, as well as human and financial capital.” Beijing could steadily reduce its financial support for leading economic institutions such as the International Monetary Fund; prioritize the development of economic and security arrangements that presently leave out the United States (such as the Regional Comprehensive Economic Partnership and the Shanghai Cooperation Organization) and undertake to construct other exclusionary ones; more proactively attempt to drive wedges between the United States and long-standing allies by casting Washington as an inconsistent and unreliable steward of world order and asserting that Beijing is better suited to adapting that system to contemporary geopolitical realities; and make a more concerted push to challenge Washington on ideological grounds.

Beijing could also further undercut the Trump administration’s “maximum pressure” campaign on North Korea. U.S. Secretary of State Mike Pompeo testified in June that there has been a “modest amount” of backsliding in China’s enforcement of multilateral sanctions on Pyongyang, acknowledging that the Chinese are “not enforcing control over their cross-border areas as vigorously as they were six or 12 months ago.” That admission came shortly before reports of a new U.S. intelligence assessment, based on evidence collected after Trump’s historic Singapore meeting with North Korean leader Kim Jong Un, that Pyongyang not only seeks to “deceive the United States about the number of nuclear warheads” in its arsenal but also may maintain more than one secret site for enriching fissile material.

On Iran, in the wake of the U.S. withdrawal from the Joint Comprehensive Plan of Action, China could decline to join any U.S.-initiated effort to sanction the regime should it resume its pursuit of nuclear weapons. It might even go further, boosting energy ties with and increasing arms sales to Tehran while expanding the scope and depth of its alignment with Russia to frustrate U.S. foreign policy objectives in the Middle East and eastern Europe. It could also accelerate its ongoing militarization of a crucial maritime chokepoint, the South China Sea; more aggressively press its claims in the East China Sea; and increase preparations for an attack on Taiwan, appreciating that a United States that is already militarily overstretched has little desire for an armed confrontation with the country possessing the world’s second-largest economy.

#### Alt fails and causes transition wars.

Smith '19 [Noah; 4/5/19; Bloomberg Opinion columnist, former assistant professor of finance at Stony Brook University; "Dumping Capitalism Won’t Save the Planet," https://www.bloomberg.com/opinion/articles/2019-04-05/capitalism-is-more-likely-to-limit-climate-change-than-socialism]

It has become fashionable on social media and in certain publications to argue that capitalism is killing the planet. Even renowned investor Jeremy Grantham, hardly a radical, made that assertion last year. The basic idea is that the profit motive drives the private sector to spew carbon into the air with reckless abandon. Though many economists and some climate activists believe that the problem is best addressed by modifying market incentives with a carbon tax, many activists believe that the problem can’t be addressed without rebuilding the economy along centrally planned lines.

The climate threat is certainly dire, and carbon taxes are unlikely to be enough to solve the problem. But eco-socialism is probably not going to be an effective method of addressing that threat. Dismantling an entire economic system is never easy, and probably would touch off armed conflict and major asdasd upheaval. In the scramble to win those battles, even the socialists would almost certainly abandon their limitation on fossil-fuel use — either to support military efforts, or to keep the population from turning against them. The precedent here is the Soviet Union, whose multidecade effort to reshape its economy by force amid confrontation with the West led to profound environmental degradation. The world's climate does not have several decades to spare.

Even without international conflict, there’s little guarantee that moving away from capitalism would mitigate our impact on the environment. Since socialist leader Evo Morales took power in Bolivia, living standards have improved substantially for the average Bolivian, which is great. But this has come at the cost of higher emissions. Meanwhile, the capitalist U.S managed to decrease its per capita emissions a bit during this same period (though since the U.S. is a rich country, its absolute level of emissions is much higher).

In other words, in terms of economic growth and carbon emissions, Bolivia looks similar to more capitalist developing countries. That suggests that faced with a choice of enriching their people or helping to save the climate, even socialist leaders will often choose the former. And that same political calculus will probably hold in China and the U.S., the world’s top carbon emitters — leaders who demand draconian cuts in living standards in pursuit of environmental goals will have trouble staying in power.

The best hope for the climate therefore lies in reducing the tradeoff between material prosperity and carbon emissions. That requires technology — solar, wind and nuclear power, energy storage, electric cars and other vehicles, carbon-free cement production and so on. The best climate policy plans all involve technological improvement as a key feature.

#### Transition impossible---requires reversing centuries of notions of everyday life

Timms 20 [Aaron; 1/27/20; writer for the New Republic, articles have appeared in The Guardian, The Outline, The Daily Beast, and The Los Angeles Review of Books; "Beyond the Growth Gospel," https://newrepublic.com/article/156024/degrowth-movement-cerbere-can-decreix-commune]///GJ

We all know that our time to stabilize the climate is short. But in the supposed battle between the Green New Deal left and degrowthers, there’s only one side that seeks, in any meaningful sense, to stabilize the climate with anything like the required urgency. In its critique of economism and rejection of technocratic business as usual, in the exhortation of its proponents to think critically about what we as a species really want, degrowth contains much that I find theoretically compelling. But the movement has surprisingly little to say on renewable energy, the result of a latent hostility to techno-scientific innovation, and the idea that billions, within the next decade, will voluntarily embrace degrowth at a sufficient scale to arrest global heating is unrealistic. Even its most ardent defenders concede that genuine degrowth—which means real, Can Decreix-grade upheaval to daily life, not just fewer steaks or car trips every year—will not materialize under present economic and social conditions. Latouche is typically forthright on this question: “Degrowth society cannot emerge from the iron corset of scarcity, needs, economic calculation, and homo æconomicus.” His meaning is what the experience of Can Decreix makes plain: that a life of pure degrowth is logically impossible in this world, indeed that the preconditions for degrowth society do not yet exist. Any attempts to institute degrowth from above will be seen as an intolerable offense to human dignity and well-being, so long as the rest of civilization is hitched to the train of economic expansion—whether capitalist, socialist, or otherwise.

Not even François can avoid compromising himself through contact with the world as it is. The degrowth he practices at Can Decreix is necessarily a diluted form of the ideal, dependent as it is on the structures and economies of the very system degrowth hopes to supersede. There’s an additional irony here, which is that virtually no degrowther wants to put down roots in the home of degrowth, though François’s partner, Alexandra Guerri, lives with him in the austere precincts of Can Decreix. Other degrowth sympathizers have joined François at the encampment in the eight years since its foundation, but they have not stayed; today he continues alone. De Decker returns to Barcelona shortly after his business at the Belvédère is concluded; other summer school speakers appear in Can Decreix for a day or two and then scuttle back to the city. If the defining property of utopia is that it’s nowhere (the word’s meaning in Greek), it’s perhaps appropriate that this utopia has attracted no one. “I feel isolated with this practice here,” François tells me on my first night at Can Decreix. “It’s a struggle to convince people about this way of life. The idea was to do something collective, but now it’s just me. Few people are willing to try something else with flowing and a new way of living.” This is no surprise. Even a hair shirt worn voluntarily is uncomfortable. Le Guin once described the anarchist lunar colony she puts at the center of The Dispossessed, the fiction that everyone here is reading, as an “ambiguous utopia.” A similar description seems apt for the home of degrowth.

A group of rowdy Irish cycling tourists stops by the Dorade, cleats clacking, and they ask for douze bières merci while the owner replies in English. I finish my coffee, then continue on my path back to Can Decreix. In the town square, I pass some of the summer school attendees. It’s been only two hours since breakfast up on the deck at Can Decreix—porridge, plums, nuts—but one of them is seated at a bench, noise-canceling headphones on, bopping to the beat, and oblivious to the world as he tears into a whole wheel of Camembert with rye crisps and a family-size packet of Bolognese sauce-flavored chips by his side. The man is salt-deprived and hungry. I feel a great surge of sympathy.

Since degrowth can’t form the basis of a realistic electoral politics, its proponents are left clinging to the lifeboat of “institutional and cultural change” as they attempt to plot a course to our collective degrowing, or they retreat into didacticism. (The working class “must master” its wants, Kallis has written, “not insist that they should be satisfied.”) What the degrowthers seek, in their priestliest utterings, is not only a new society but also a complete reset of the psychological habitus of everyday life. For degrowth to “work,” its ideal-type citizen must be radically different from you or me, or almost anyone else living under industrial modernity today. This homo post-æconomicus will operate according to as yet undiscovered automatisms, affects, and instincts, conjuring in the process a more sustainable model of human endeavor onto the stage of our desperately overheated globe.

This could indeed be a great thing. After all, a society built on reciprocity, sharing, self-limitation, and care sounds far preferable to the plutocratic catastrophe of present-day financialized capitalism. But such a society cannot arise if we continue to view material limitations as privations. It will only work if the longing for less comes naturally, is authentically aspirational—if we want to live the life unseasoned. This is the journey from the Belvédère to Can Decreix: a journey from We Want Everything to Actually, We Want Very Little. Climate stabilization needs to happen now. Degrowth cannot happen now. This is why degrowth is not a plan for combating climate change, not in any immediate or direct sense at least. Instead, it is something much more ambitious, with a much hazier time horizon: a project to build a new person.

My contributions to the many energy-sapping tasks required to keep Can Decreix in order throughout the summer school—lugging wood, creating shade for discussion groups using bamboo mats and wooden rods, repairing stone walls, building rocket stoves, coming to grips with human compost—have been every bit as half-assed as you’d expect from a weak, unresourceful knowledge worker in the dog days of capitalism with panna cotta-soft hands and no interest in camping. I am, on anyone’s reading, a hopeless volunteer, the least useful of the useful muzhiks. The one activity at which I’ve shown any kind of skill is the chabrot, a postprandial ritual François has adapted from regional custom. There are two types of wine made in-house at Can Decreix: a sweet grenache and rancio, a dry oxidized wine similar to sherry. To perform the chabrot, each diner pools wine into their plate at the end of the meal, agitates the wine with a fork to degrease the plate, then drinks the wine. (Blessedly the house prohibition on addictive substances does not extend to alcohol.) The point of this ritual is to “go easy on the pipes” when washing the dishes, François tells us. I’ve developed a technique of mopping food scraps off the wine-flooded plate with my fingers, drinking the wine, licking my fingers, then licking the plate clean, such that it does not need to be washed at all and is immediately ready for reuse. For days, I survive off a single, self-cleaned plate, earning François’s trust as the summer school’s “official zealot of the chabrot.” The revulsion others feel at this practice is obvious; despite eager propagandizing on my part, no one performs the chabrot with anything like my level of ideological rigor.

There was once a time in the West when licking your fingers at the table, along with a host of other behaviors now considered beyond the pale of respectable society, such as blowing your nose into your hand, were deemed acceptable. The “civilizing process,” as Norbert Elias called it—the gradual recalibration of daily social mores by which Europeans cast off these habits—took centuries, and required the mass internalization of a completely new model of individuality. This was not planned, but was rather the result of myriad colliding stochastic evolutions: state formation and the state’s monopoly over violence, urbanization, the growing differentiation of occupations in increasingly complex economies. A similar process on a similar time line seems necessary for degrowth. Society’s collective degrowing will only make sense once individuals want in a way we don’t want, feel as we don’t feel. Whether a future this different can be engineered is debatable. But that does not mean there remains, in the interim, no virtue to thinking carefully about our course, or even slowing down. On the train of progress, sometimes it’s wise to pull the emergency brake.

#### Industrial ag is better.

Ted Nordhaus 21, Founder and Executive Director of the Breakthrough Institute and Co-Author of An Ecomodernist Manifesto, and Dan Blaustein-Rejto, Director of Food and Agriculture at the Breakthrough Institute, Conducted Research with the Environmental Defense Fund, International Center for Tropical Agriculture, and Farmers Market Coalition, “Big Agriculture Is Best”, Foreign Policy, 4/18/2021, https://foreignpolicy.com/2021/04/18/big-agriculture-is-best/

Moreover, organic farms, large and small, don’t actually outperform large conventional farms by many important environmental measures. Scale, technology, and productivity make good environmental sense and economic sense. Because organic farming requires more land for every calorie or pound produced, a large-scale shift to organic farming would entail converting more forest and other land to farming, resulting in greater habitat loss and more greenhouse gas emissions. And while organic farming doesn’t use synthetic pesticides or fertilizers, it often results in greater nitrogen pollution because manure is a highly inefficient way to deliver nutrients to crops.

Another benefit of large-scale U.S. farms is that because they are so efficient, economically and environmentally, they are also able to produce vastly more food than Americans can consume, making the country the world’s largest agricultural exporter as well.

That benefits the U.S. economy, of course, but it also comes with an environmental benefit for the world. In the contemporary environmental imagination, highly productive, globally traded agriculture is a bad thing—poisoning the land at home and undermining food sovereignty abroad. But in reality, a pound of grain or beef exported from the United States almost always displaces a pound that would have been produced with more land and greenhouse gas emissions somewhere else.

#### Growth outruns recurrent blackball risks and shifts public preference to optimal existential risk mitigation---unlocks infinite future value.

Aschenbrenner ’20 [Leopold; September 6; Research Fellow in Economics at the Forethought Foundation and Global Priorities Institute at the University of Oxford, B.A. from Columbia University; Global Priorities Institute, “Existential risk and growth,” no. 6]

Secondly, note that this existential risk Kuznets curve appears in the transition dynamics of the optimal allocation. Considering that existential risk mitigation is a global public good, it is unlikely resources are allocated to safety optimally in the real world. As such, this should not be taken to be a prediction of what a particular country with a particular set of institutions will do with regard to existential risk.

Nevertheless, there are a number of reasons why we might still be interested in the transition dynamics under the (impatient) optimal allocation. For one, since there are very long timescales involved here, it is very hard to know (and thus model) what government and societal institutions will evolve to deal with existential risk. However, the ideal these institutions will likely aim at is the optimal allocation. The optimal allocation might thus be a rough proxy for the real-world allocation.

Moreover, the (impatient) optimal allocation represents what I would call the “democratic possibilities frontier” or the “impatient public possibilities frontier.” Those who are principally concerned about the long-run future of humanity and advocate for a zero rate of pure time preference might want us to spend as much as possible on safety in order to avoid existential catastrophe and enable human flourishing millions of years into the future. Indeed, even in the Hamiltonian of the optimal allocation, the relative value of life ˜vt is a discounted term; the lower your discount rate ρ, the more you would want to spend on safety. However, the broader public is not so patient. As the empirical evidence cited earlier shows, people tend to have a (relatively large) positive rate of pure time preference; the public is impatient. Even perfectly designed institutions that take into account existential risk externalities will ultimately be constrained by the degree to which society actually cares about the future—they will be constrained by an impatient public. The existential risk Kuznets curve illustrates the implications of this impatience. On the one hand, this impatience results in a period of initially rising levels of risk. For example, this might mean that the arguably rising level of existential risk of the past century is not necessarily a market failure, but may well be part of the optimal path given positive pure time preference. On the other hand, rising standards of living lead even the most impatient public to start caring more about safety and averting an existential catastrophe. This leads workers and scientists to be shifted to the safety sector, eventually causing the hazard rate δ to exponentially decline. Even if people are impatient, if you make them well off enough, they will start caring about existential risk.

Seeing the arguably rising levels of existential risk in the past century, some might call for an end to economic growth. Yet this existential risk Kuznets curve indicates that stopping economic growth would be deleterious: it would simply freeze the hazard rate at a high level, leading to a fatal catastrophe sooner or later. Economic growth enables even an impatient public with a high rate of pure time preference to start caring about life, thus ultimately reducing risk and even leading to positive M ∞.

Some prominent thinkers have previously posited that humanity is passing through a unique period with an elevated risk of technological catastrophe. Sagan (1994) calls this the “time of perils.” Parfit (2011, p. 616), concurs:

We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy.

This existential risk Kuznets curve provides theoretical evidence that grounds the intuition that we are living in a “time of perils.” We may be economically advanced enough to have created the means for our permanent destruction, but not economically advanced enough to care enough about decreasing this existential risk.

This “time of perils” has profound implications. For instance, those alive today who care about preserving the long-term future of humanity may have extraordinary altruistic leverage. By working to reduce existential risk now (increasing the resources dedicated to safety), they can reduce the area under the “hump” of the hazard rate δ. This in turn increases M∞, unlocking tremendous value. Moreover, since so few resources are dedicated to safety at the moment, there are likely very high marginal value opportunities available to work on safety. This is a unique situation. Suppose existential risk did not decline to zero exponentially: then M∞ = 0 regardless—the existential risk curve would never bend—so reducing risk now would not change the probability of a long and flourishing future of humanity. And if existential risk did not initially increase, it would never be such a substantial challenge and there wouldn’t be such high marginal value opportunities to work on reducing it.

#### No overaccumulation---dematerialization is globally true!

Lokshin, 21—Lead Economist with the Office of the Chief Economist for Europe and Central Asia, World Bank (Michael, “Dematerialization, degrowth, and climate change agenda,” <https://blogs.worldbank.org/developmenttalk/dematerialization-degrowth-and-climate-change-agenda>, dml)

These are not isolated examples of the intensity of modern agriculture. The total crop tonnage in the United States tripled since the 1970s, but the cropland area shrunk from about 472 million to 390 million hectares by the 2010s, saving an area three times larger than the United States’ total urban area. Productivity gains in animal agriculture dramatically reduced the environmental footprint of livestock production in the US. Similar reductions in farmland accompanied by large increases in output are seen in countries of Europe, Latin America, and East Asia. The global footprint of agriculture has “started decreasing in size during the past two decades.”

US agriculture, having a positive trade balance, consumes 25 percent less fertilizer than it did in 1999, and the volume of water used for irrigation has decreased by 22 percent since then. Raising the average world farm productivity to the levels seen among US farmers would allow enough food to be grown to feed 10 billion people an American-type diet on half the land currently used for farming. The land released would exceed the area of Amazonia (7 million square kilometers).

Most developed countries are now in the stage of “forest transition,” when a country gains forest area. Europe is greener now than it was 100 years ago; the size of US forest resources remained constant over the 20th century and increased over the last decade. China is adding almost 2 million hectares (about 1 percent) of forests a year. And rates of global forest loss have been slowing since 1980.

At the same time, forestry has become more productive. Shifting wood harvest from the north to the southeast, where the forests are twice as productive, decreased the United States’ logged area by 3.1 million hectares. Forest plantations are much more productive than unmanaged forests: Brazilian eucalyptus plantations provide at least 10 times more timber per hectare per year than northern forests do. The consumption of wood is also declining. Ships and railroads are no longer built of wood. Globally, the use of wood for fuel and construction dropped sharply since the 1960s; the global demand for paper has been stagnant, decreasing across the developed countries over the last two decades. The footprint of the developed world on the planet, as an area occupied by human activities, is shrinking.

There has also been a marked decline in US consumption of the most economically important minerals. According to the US Geological Survey (USGS), since the end of the 20th century, US consumption of metals has fallen by 15 percent for steel, 30 percent for aluminum, and 40 percent for copper. The decline reflects increased efficiency. Aluminum soda cans are six times lighter than they were in the early 1960s, and cars weigh 30 percent less than they did. The introduction of high-strength steel framing, reinforced concrete, and stronger and lighter glass have reduced consumption of cement, stone, sand, and gravel in construction. US energy use has plateaued for more than a decade. Similar trends are observed in the UK, which began to reduce its consumption of physical resources between 2001 and 2003. Even individual caloric intake is falling in the UK, mainly because of the decline in most environmentally damaging meat consumption.

Off-shoring could affect the local consumption of national resources. Country statistics, which rely on a territorial perspective of material use, might fail to account for the global patterns of material consumption. What looks like “green growth” might be just an artifact of globalization. For example, some intermediate metal consumption might be hidden in imported finished merchandise like cars or trucks. While these are valid concerns, the reduction of materials used in agriculture, forestry, and construction appears to be largely isolated from such measurement issues. Actual consumption of these materials in developed countries is dropping; whether the material is imported or not is irrelevant.

The concept of dematerialization refers to an absolute or relative reduction in the quantity of materials required to serve economic functions in society. Unlike the traditional `end-of-pipe’ measures, dematerialization is an input-oriented strategy intended to reduce environmental damage at the source. The production and consumption of products, the so-called “industrial” and “social metabolisms,” could harm the environment. Reducing the volume of material and energy used to produce goods and services diminishes the environmental impact. But in contrast with the degrowth movement, which is based on the premise that environmental damage rises with population and economic growth, the proponents of dematerialization argue that societal metabolism might exhibit an inverted U-shaped relationship with economic growth. A country’s environmental impact rises as its national income grows but then declines after a (very) high level of GDP is reached. Similar argument is made by the recent literature on growth and pollution conversions.

If we believe these trends, the reduction (both relative and absolute) of material consumption observed in developed countries might have important policy implications. Growth in developed countries might not necessarily cause environmental distress and natural resource depletion. Advanced economies may be able to decouple economic growth and growing volumes of resource use. The new technologies are making the economic growth in developing countries greener and less material-intensive compared to the growth the now rich countries experienced at comparable income levels decades ago.

Several factors drive dematerialization. Technological progress improves efficiency and reduces the consumption of resources in manufacturing. The digital economy “swaps bits for atoms,” replacing physical goods and services with their digital versions; 3D printing shifts technologies toward custom-designed components with little or no waste. Competition encourages companies to cut costs and use less materials. Citizens and governments are increasingly putting premiums on the environment, embracing policies to reduce social metabolism.