# 1NC

## 1

#### CP – Asteroid mining by private entities should be banned.

#### Space policies are all grounded on representations of outer space and rely on a virtual relationship to space itself produced by mediated technological simulations — this virtual relationship erases territory as threat and risk becomes ubiquitous and requires a drive towards certainty that makes weaponization and conflict inevitable

Bormann 9 (Natalie Bormann – Teaching Professor at Northeastern University. “The lost dimension? A spatial reading of US weaponisation of space” Ch. 5 in *Securing Outer Space: International Relations Theory and the Politics of Space* (2009) pgs. 81-89. <https://books.google.com/books?id=xHt8AgAAQBAJ&pg=PA78&lpg=PA78&dq=virilio+and+%22outer+space%22&source=bl&ots=stoPb9axPg&sig=ACfU3U1kOc7P7ncw4EeHZ-k5I0XgAK6jbw&hl=en&sa=X&ved=2ahUKEwj9isOt_6XjAhWpxVkKHY5SB0MQ6AEwCXoECAkQAQ#v=onepage&q=virilio%20and%20%22outer%20space%22&f=false>, DOA: 8/1/19,)

The representation of a ‘battlefield’ and combat in and through space is certainly contingent in our reading of key documents; for instance, in 2001, the US Space Commission evoked the powerful image that the US is an ‘attractive candidate for another Pearl Harbor’ in space, making the case that weapons in space were needed to counter perceived US vulnerabilities in form of an attack on a virtual US territory and habitat in space. Further examples for the ways in which claims to spatiality are deeply implicated in the forging of US space weaponisation abound; they range from mapping outer space as a ‘final frontier’, the ‘ultimate high ground’, or a space that follows ‘the rules of the road’ for which there is a ‘space road map’. One finds these discourses generally embedded within the logic of the our/their space nexus coupled with the attributes of defending our space versus an offending other that allow for the drawing of the boundaries around space. In 2004, US Strategic Command (2004) contemplated that the first step in space control is identifying exactly what’s in orbit around the Earth, who it belongs to, and its mission. It goes on to claim that space control involves the ability to ‘ensure our use of space while denying the use to our adversaries. And lastly, the US National Space Policy of 1996 narrates a story along similar lines when it proposes the need to assure that ‘hostile forces cannot prevent our use of space’.

How does this matter? I argue that the task of tracing these constructions of spatiality, the meaning-giving of the ‘material’ as reality, is vital for the direction space policies have taken (and will continue to take). There is no spatiality – as produced in the aforementioned examples – that is not organised by the determination of frontiers and boundaries that in turn determine the space ‘inside’ these drawn lines. The virtual function of space weapons is what has allowed for the process of ‘drawing’ and mapping around ‘our space’, and has allowed for ‘stationing’ weapons to control, patrol and defend along a virtual territory with virtual frontiers (the extend of which has been determined by the reach of technology). The construction of a space of a certain kind, and the protection of its ‘new’ frontiers, is what precedes its weaponisation; it is what renders it meaningful. If we assume the construction of space, as opposed to the notion that space can be explored, then we need to ask: what has informed this process? What turns space into a battlefield?

‘[War] now takes place in “aero-electro-magnetic space”. It is equivalent to the birth of a new type of flotilla, a home fleet, of a new type of naval power, but in orbital space’ (Virilio 2000b). What should be clear by now is that material space is pre-constructed. According to Virilio, it is the technical that precedes the spatial. The possibility of new military technology underpins the ways we invent and organise our environment, geographies and landscapes. And it is the effects of technology which produces outer space as a place and authorises contingent action in support of weaponisation. This is not to suggest that technologies have an existence of and on their own and independent of social practice; of course, technology cannot be studied in isolation (see Bourdieu 1992).

The new technologies that allow us to penetrate outer space are producing new domains of experience and new modes of representations and perception. Now, that technology is deeply infatuated with current policies in outer space comes to no surprise, and we find ourselves amidst visions of ‘hyper-spectral imagery’, ‘advanced electro-optical warning sensors’ and ‘space-based radars and lasers’. While I am interested in these technologies of, and soon in, space I am even more interested in the ways in which they augment spatiality and accelerate claims to, and over, spatial authority. Thus, how do these technologies relate to space? Virilio is clear on this: to begin with, and to strip these technologies of their obfuscation, they shrink the planet (and space outwith the planet, the exoatmospheric); and they do so in two ways. First, Virilio insists that technologies lead to a doing away of spatial distance and the geo-strategic reference points that go with it. As the Rumsfeld Commission put it quite aptly, ‘Space enters homes, businesses, schools, hospitals and government offices’ (US Space Commission 2001). To take this notion further and to include the idea of a space-based laser as an example, from any given spot in outer space we will be able to strike and destroy each other at any given point and at any given time. Space stops to matter. The author contends that technologies therefore lead space to suffer from ‘torsion and distortion, in which the most elementary reference points disappear one by one’ (Virilio 1991: 30). The foreseeable deployment of a space-based laser, or, of a kinetic energy interceptor missile (designed to ‘hit and kill’ an incoming hostile missile) are testament to this sense of distortions insofar as space-based weapons would overcome the ‘location problem’ and the need of proximity close to target. As a recent study put it aptly, ‘interceptors fired from orbiting satellites could in principle defend the United States against ICBMs launched from anywhere on Earth [. . .]. Their coverage would not be constraint by geography’. The Transformation Study Report of 27 April 2001, reflects similar sentiments, claiming that ‘Space capabilities are inherently global, unaffected by territorial boundaries or jurisdirectional limitations’ [emphasis added]. It follows from here that, second, technologies ‘reduce-distance-reduce-reaction-time’ – or, as Virilio puts it much more eloquently: not only does technology deterritorialise space it also de-personalises it (and us in our relation to space). No doubt, outer space plays a key role in the ‘real-time’ enhancement of military operations on a global scale. Satellites are not only used to spot targets as they emerge and transmit data but they also allow us to offset weapons that meet these targets anywhere and at any time – instantly. The swiftness blurs if not erases the assumed (and familiar) distinction between offence and defence, which affects our views on spatiality insofar as the image of the battlefield can now become ubiquitous: ‘Every place becomes the front line’ (Virilio 1991: 132). Virilio further clarifies this for us; whereas in the past there was a sense that the ‘front’ is where the tanks are, now, he suggests, we assume that ‘where we find the satellites there is the fourth front’ (Virilio 2002: 3). This is furthered and amplified by the US Air Force vision that calls for ‘prompt global strike space systems with the capability to directly apply force from or through Space against terrestrial targets’ (US Air Force Space Command 2003). And fast forward to the present, the Quadrennial Defense Review of 2006 is clear in its visualisation for Intelligence, Surveillance and Reconnaissance in which it seeks to establish what it aptly terms an ‘unblinking eye’ over the ‘battlespace’ that suggests the instant, constant and ‘persistent surveillance’ of US space in outer space (Quadrennial Defense Review 2006: 55). For Virilio, this process of de-materialisation of space in outer space along these lines can turn into a de-realisation of the objectives of fighting and destruction, and as suggested by the problematic of proximity that this chapter addresses. There is no time left for reflecting on, and responding to, warfare and its mode of targeting, hitting, destruction and killing and, subsequently, no time to invent space differently. The author expresses this as the ‘dematerialization of armaments, de-personalisation of command, de-realisation of the aims of war’ (Virilio 2000: 87).

In an attempt to close the circle to the start of this chapter and draw the line back to the notion of an imagination of outer space as a battlefield – yet devoid of matter – consider the following: creating, fabricating, moulding and representing a field of combat in outer space, ubiquitous and instant in its ability to project modes of destruction and killing, in fact determines, reproduces and locks in the very existence and rationale of the need to defend space against an other, colonise space before a competitor can do so, and divide space into ‘ours’ and ‘theirs’. Put differently, the invention of outer space as a battlefield with the above ‘qualities’ assumes a notion of vulnerability and threat to that space – at any time and from anywhere – before it in fact becomes one. Thus, outer space as a sphere of permanent crisis in effect constitutes and constructs the very reality that it purports to counter. I am referring here to Carol Cohn’s (1987) argument that military projects pre-empt threats and threatening intentions. In the context of past US/Soviet rivalry she contends that, if one asks what the Soviets ‘can’ do, one quickly comes to assume that ‘that is what they intend to do’. In other words, strategic planning and the logic of worst-case-scenarios commit us to assume something will happen. Foucault’s notion of ‘technologies of normalization’ springs to mind by way of summary, and by which the author depicts technology as an essential component in the systematic creation, classification and control of space, habitat and its claim to contingent action drawn from that control over that space.

I began this chapter by implicitly suggesting that the ‘problem’ of outer space lies in the fact that – unlike the ‘blue sky above us’ or the ‘Azure Coast’ in the Virilio quote at the outset – we cannot ‘see’ outer space; unlike the tanks, guns, and soldiers, on ground and air, we cannot ‘see’ the satellites, anti-satellite weapons and space-based lasers. Both the place of outer space and its reference points for space-based weapons are presented to us through that which we can know about them – a particular reality, a certain landscape, and as organised in a meaningful and common-sensical way. This is not to suggest, however, that what we ‘see’ (again, ‘the blue sky’) is not equally dependent on that which we can know about it. According to Virilio, there is ‘little’ physicality in our geographical vision; most of what we ‘see’ is achieved through certain modes of representation, technology, narrating, and so forth. In this sense, this chapter was interested in that which we cannot look at on, and from, Earth and in the distance – yet, which is always-already ‘Earth-bound’ and locally embedded. It was interested in the landscapes and geographies of outer space which we cannot ‘see’ and visualise – yet, which are presented to us and narrated as spatially contingent. And it was concerned with the military technologies in outer space which are ‘Earth-bound, locally embedded, and close to us’ – yet, which provide for the possibility of a mode of war fighting and destruction ‘from the distance’, clean and sanitised, instant and with no time left for reflection.

## 2

#### **CP – China ought to fully fund a program to cover 4.8% of the surface of the Earth’s oceans in a monolayer of 0.1 μm diameter latex particles, either hollow, or of core-shell morphology, bearing a conventional stabilization system that is inactivated in salt water.**

Solves warming and environment, only costs $2 billion, and avoids all solvency deficits associated with traditional ocean albedo modifications.  
Morgan 11 [10/8/11, John, PhD in physical chemistry, runs R&D programmes at a Sydney startup company, research experience in chemical engineering in the US and at the Commonwealth Scientific and Industrial Research Organisation, Australia's national science agency, “Low intensity geoengineering – microbubbles and microspheres,” <http://bravenewclimate.com/2011/10/08/low-intensity-geoengineering-microbubbles-and-microspheres/>]

Is there another way to look at this? The Achilles heel of the hydrosol approach is the short bubble lifetime. But are there other ways to brighten water? Are there any other micron sized light scattering particles cheaply available in prodigious quantities, which float in water and don’t dissolve? It turns out the answer is yes. Synthetic latex is produced on a huge scale – [1010 kg in 2005](http://books.google.com.au/books?id=3CdgNiBrHfIC&pg=PA43&lpg=PA43&dq=cost+of+bulk+synthetic+latex&source=bl&ots=X5hv6DcDeR&sig=48ZERM5d3UWtW2yZ4NDtjhiKriU&hl=en&ei=5iGITuPBHayUiQeAwe2jDw&sa=X&oi=book_result&ct=result&resnum=5&ved=0CDoQ6AEwBA#v=onepage&q&f=false). A latex is a dispersion of polymer microspheres in water (Figure 5). The particle size is typically around 0.1 – 0.5 μm. The polymer content is high – about 50% by weight. And its cheap – [a bit over a dollar per kilo wet](http://books.google.com.au/books?id=3CdgNiBrHfIC&pg=PA43&lpg=PA43&dq=cost+of+bulk+synthetic+latex&source=bl&ots=X5hv6DcDeR&sig=48ZERM5d3UWtW2yZ4NDtjhiKriU&hl=en&ei=5iGITuPBHayUiQeAwe2jDw&sa=X&oi=book_result&ct=result&resnum=5&ved=0CDoQ6AEwBA#v=onepage&q&f=false). It looks like a bright white opaque liquid, like wood glue, which is a polyvinylacetate latex. Its a bulk commodity used in adhesives, paper coatings, paint and many other applications. The common polymers are acrylates, polystyrene and its copolymers, PVA, and others. These polymers themselves are inert and non toxic. Whether they present any physical risk to the biota needs to be determined but given the small particle size and low concentration in a milieu already loaded with natural micro- and nanoparticles it seems low risk. The main safety concern in my opinion would be any residual monomers, which are toxic. But these can be eliminated, certainly to the point where these materials can be safely unleashed on the public as paints and glues. The chief virtues of latex particles over bubbles is they don’t dissolve, they don’t coalesce, they are durable, and they can be made much smaller. They have a density of just over 1 g cm-3 so they sink, but at 0.2 micron the sedimentation velocity is too slow to matter. This presents a different problem – the chief loss mechanism now is not dissolution but loss by convection to deeper waters. Is there some way to keep these particles afloat? I think there is. Most of these latex polymers, polystyrene, for example, are hydrophobic – they’re water repellent. To keep the particles in suspension requires added surfactants, or putting electrically charged groups on the surface. But when diluted with salt water, both these stabilization mechanisms fail. Without stabilization a polystyrene sphere will attach to the water surface. Breaking waves will drive them under, but rising bubbles will scavenge them back to the surface again. This mechanism is well known and extensively studied in the mineral separation process of flotation, where particles of mineral ores are recovered from slurries by attachment to rising bubbles. The natural bubble population from breaking waves could keep even submicron particles concentrated at and near the ocean surface (Figure 6). The use of latex technology opens other doors for engineering particle properties. For instance, rather than producing a particle composed of a single polymer, its possible to construct a particle with two different polymers in a core-shell morphology, or even hollow particles. Such particles can have much higher scattering power than simple spheres, and are also made in bulk at commodity prices. Indeed, they are used as opacifiers in paint. We could paint the oceans white. Painting by numbers Lets run the numbers on this and ask, what would it take to reverse current warming? First we need to know how much light these particles scatter back to space. I used[Mie theory](http://omlc.ogi.edu/calc/mie_calc.html) to analyse scattering of 500 nm wavelength light (roughly the solar peak) from 0.1 μm diameter polystyrene spheres, as if the sun were overhead. The back scattering from these very small particles is intense – 42% of overhead light returns to space. And this is just direct scattering. Some of the light that scatters forward will scatter off a second particle, and a third. Multiple scattering will see more than 42% of light returned to space. Since these particles attach to the surface, lets consider, for the moment, a monolayer on the water surface. This requires 1014 particles per square metre, with a volume of 5.2×10-8 m3 per m2 (or 5 parts per billion of the top 10 m, for comparison with Seitz’ figures). Polystyrene has a density of 1050 kg m-3, so that’s a mass of 55 mg m-2. Over 3.16×1014 m2 of ocean that’s 1.7×1010 kg polymer. What would this do to the earth’s energy balance? Average insolation (accounting for cloud cover [Jin et al. 2002, cited by Seitz]) is 239 Wm-2. The monolayer cross sectional area fraction is pi/4. So the energy returned by direct overhead scattering is about 78 W. That’s huge compared to the current CO2 forcing of about 2.25 Wm-2. Modelling reported by Seitz indicates an increase of ocean albedo of 0.05 translates to an increase of planetary albedo by 0.031 [Seitz 2010; Figure 5]. So I’ll assume planetary albedo increase is 60% of the ocean albedo increase, which means we need ocean backscattering of 3.75 Wm-2. We would only need 4.8% of a monolayer to offset current CO2 forcing (ignoring the contribution from multiple scattering). 4.8% of a whole ocean monolayer is 8.3×108 kg of dry polymer, or about 1.7×109 kg wet latex. At say $1.20 per kg, this would cost $2.0 billion and account for 17% of 2005 global production capacity. This is, surprisingly, well within reach. $2.0b to reverse global warming is cheap. Restricting dispersal to the mid latitudes where the greatest effect is achieved, using core-shell latex technology, and properly accounting for multiple scattering would see this cost drop even further. Annual growth in latex production grew organically by [4.5% per annum](http://books.google.com.au/books?id=3CdgNiBrHfIC&pg=PA43&lpg=PA43&dq=cost+of+bulk+synthetic+latex&source=bl&ots=X5hv6DcDeR&sig=48ZERM5d3UWtW2yZ4NDtjhiKriU&hl=en&ei=5iGITuPBHayUiQeAwe2jDw&sa=X&oi=book_result&ct=result&resnum=5&ved=0CDoQ6AEwBA#v=onepage&q&f=false) between 2000-2005. Ramping production by 17% would be completely feasible. The ongoing cost depends on the residence time of the particles at the ocean surface. Equatorial currents [run at about 1 ms-1](http://oceanmotion.org/html/resources/oscar.htm), which would imply a traversal time of about 1 year for the Pacific ocean. Mid latitude the currents are much slower. The latex particles themselves will degrade in the environment, and there will be losses by association and entrainment in a complex marine environment. But let’s provisionally estimate a cost of $2b per year. This is significantly cheaper than, say, stratospheric sulfur aerosol injection which is estimated at $25-50b per year, let alone space sunshades. And it doesn’t require exotic engineering, enabling R&D, or orbital launches – it uses existing materials at a rate well inside existing production capacity. Conclusion So consider this final elaboration of Russell Seitz’ bright idea: 0.1 μm diameter latex particles, possibly hollow, or of core-shell morphology, bearing a conventional stabilization system that is inactivated in salt water ensuring that the particles are retained at and near the surface, are produced in bulk using about 17% of existing production capacity and using commercial recipes, and are sprayed onto the sea from tanks aboard ships or crop dusting aircraft, oil rigs, and other structures, in the mid latitudes. For a cost in the order of a mere $2b per year we could offset current global warming, subject to the many disclaimers and qualifications discussed above, and many others not mentioned. More limited, local applications, such as the direct cooling of coral reefs as envisaged by Seitz for the microbubble concept, are also possible.

## 3

#### Asteroid mining is only possible by private, commercial actors appropriating space – mining asteroids makes space exploration sustainable and solves environmental destruction on Earth

Britt, 2021

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When LA-based blues and rock band Canned Heat wrote “Poor Moon” in the same year Neil Armstrong took his famous giant leap, their lyrics reflected the Cold-War-era concern that spacefaring nations would one day scar the moon by testing a bomb on its surface. While this, thankfully, hasn’t yet happened, the moon — along with all the other planets, moons, and asteroids in the solar system — could one day be mined for resources to meet Earth’s ever-growing needs. Why Mine Off-Earth? Space Exploration Is Expensive While the price tag involved in establishing a human colony on the Moon or Mars is mind-boggling, the costs of sustaining off-Earth colonies and keeping them resupplied indefinitely are even more so — unless the settlements can somehow pay for themselves. Mining for much-needed metals and sending them back to Earth could change the game for space exploration, transforming off-world ventures from prohibitively expensive to financially viable. That being said, bringing a heavy payload of minerals down through Earth’s atmosphere is not currently feasible. Futurists believe that instead, minerals mined in space will be used in space as humanity spreads outwards. Rare Earth Materials Are Abundant There are around two million near-earth asteroids brimming with rare earth minerals, precious metals, iron, and nickel. The Moon contains helium-3, yttrium, samarium, and lanthanum, while Mars contains an abundance of magnesium, aluminum, titanium, iron, chromium, and trace amounts of lithium, cobalt, tungsten, and other metals. Importantly, many planetary bodies contain water, which through hydrolysis can be used as rocket fuel. It Helps with Sustainability Earth’s resources are finite. Non-renewable metal resources are inherently unsustainable, and mining causes environmental degradation all over the world. The answer is to source our minerals off-world. Off-world minerals are exhaustible as well, but the argument is that mining lifeless rocks such as the Moon or asteroids is infinitely preferable to continuing to damage Earth’s fragile biosphere. Discoveries May Be Made Opening space to commercial mining does not mean that science takes a back seat. Space-mining interests could drive scientific advancement by discovering extremely rare or unknown minerals on other planetary bodies. Robotics Would Do the Work While countless lives have been lost on Earth over the centuries due to mining accidents and disasters, it is likely that humans will not have to risk their lives by traveling in-person to off-world mining sites. Regolith-sampling probes are already in use and provide an early glimpse of what a scaled-up robotic mining craft may one day look like. Off-Earth Mining and Space Law The 1967 Outer Space Treaty is unclear in terms of whether any country — or private company — can claim mineral rights in space. It states that “exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind.” The 1979 Moon Treaty was an attempt to declare the Moon and its natural resources to be CHM (Common Heritage of Mankind). Significantly, it called for “an equitable sharing [by all countries] in the benefits derived from these resources.” Most nations, including the U.S., did not ratify this treaty. Recently, the U.S. has accelerated its efforts to create a legal framework for the exploitation of resources in space. The Obama administration signed the U.S. Commercial Space Launch Competitiveness Act of 2015, allowing U.S. citizens to “engage in the commercial exploration and exploitation of space resources.” In April 2020, the Trump administration issued an executive order supporting U.S. mining on the Moon and asteroids. In May 2020, NASA unveiled the Artemis Accords, which included the development of safety zones around lunar mining sites. Former NASA administrator Jim Bridenstine said: “It’s time to establish the regulatory certainty to extract and trade space resources,” and clarified in a separate statement that: “We do believe we can extract and utilize the resources of the moon, just as we can extract and utilize tuna from the ocean.” NASA planned an Asteroid Redirect Mission which involved collecting a multi-ton boulder from an asteroid and redirecting it into a stable orbit around the moon, but the mission was canceled in 2017. What Companies Are Preparing for a Future of Space Mining? One thing that is becoming clear is that off-earth mining is unlikely to be a state-run activity. Instead, several private companies are jockeying to be first in line to access minerals in space. iSpace (Japan) has a mission to “help companies access new business opportunities on the moon,” including the extraction of water and mineral resources to spearhead a space-based economy. Planetary Resources (defunct) was founded in 2009 with the goal of developing a robotic asteroid mining industry. Despite having high-profile founding investors including Alphabet’s Larry Page, Eric Schmidt, and Virgin Group founder Richard Branson, Planetary ran into financial trouble in 2018 and was gone by 2020. Deep Space Industries (defunct) was another early mover that intended to explore, examine, sample, and harvest minerals from asteroids. DSI was acquired by Bradford Space in 2019. Offworld is an AI company building “universal industrial robots to do the heavy lifting [including mining] on Earth, the Moon, asteroids, and Mars.” The Asteroid Mining Corporation (UK) is a venture currently crowdfunding for a 2023 satellite mission called “El Dorado,” which will conduct a spectral survey of 5,000 asteroids to identify the most valuable for mining. Alongside the U.S., the tiny European nation of Luxembourg has also developed a space mining framework and has subsequently emerged as a European hub for the fledgling industry.

#### Space habitation solves every existential threat -- failure makes human extinction inevitable

**Kaku 18** Dr. Michio Kaku (Professor of theoretical physics in the City College of New York and CUNY Graduate Center, Co-Inventor of String Field Theory, PhD from UC Berkeley). The Future of Humanity: Terraforming Mars, Interstellar Travel, Immortality, and Our Destiny Beyond. Doubleday Publishing. 2018. pp 25-33. Recut apark [I disagree with the author’s use of the word “pioneer”]

It is as inescapable as the laws of physics that humanity will one day confront some type of **extinction-level event**. But will we, like our ancestors, have the drive and determination to survive and even flourish? If we scan all the life-forms that have ever existed on the Earth, from microscopic bacteria to towering forests, lumbering dinosaurs, and enterprising humans, we find that more than 99.9 percent of them eventually became extinct. This means that extinction is the norm, that the odds are already **stacked heavily against us**. When we dig beneath our feet into the soil to unearth the fossil record, we see evidence of many ancient life-forms. Yet only the smallest handful survive today. Millions of species have appeared before us; they had their day in the sun, and then they withered and died. That is the story of life. No matter how much we may treasure the sight of dramatic, romantic sunsets, the smell of fresh ocean breezes, and the warmth of a summer’s day, one day it will all end, and the planet will **become inhospitable to human life**. Nature will eventually turn on us, as it did to all those extinct life-forms. The grand history of life on Earth shows that, faced with a hostile environment, organisms inevitably meet one of three fates. They can leave that environment, they can adapt to it, or they will die. But if we look far enough into the future, we will eventually face a disaster **so great that adaptation will be virtually impossible**. Either **we must leave the Earth or we will perish**. There is no other way. These disasters have happened repeatedly in the past, and they will inevitably happen in the future. The Earth has already sustained five major extinction cycles, in which up to 90 percent of all life-forms vanished from the Earth. As sure as day follows night, there will be more to come. On a scale of decades, we face threats that are not natural but are largely self-inflicted, due to our own folly and shortsightedness. We face the danger of global warming, when the atmosphere of the Earth itself turns against us. We face the danger of modern warfare, as nuclear weapons proliferate in some of the most unstable regions of the globe. We face the danger of weaponized microbes, such as airborne AIDS or Ebola, which can be transmitted by a simple cough or sneeze. This could wipe out upward of 98 percent of the human race. Furthermore, we face an expanding population that consumes resources at a furious rate. We may exceed the carrying capacity of Earth at some point and find ourselves in an ecological Armageddon, vying for the planet’s last remaining supplies. In addition to calamities that we create ourselves, there are also natural disasters over which we have little control. **On a scale of thousands of years,** we face the onset of another ice age. For the past one hundred thousand years, much of Earth’s surface was blanketed by up to a half mile of solid ice. The bleak frozen landscape drove many animals to extinction. Then, ten thousand years ago, there was a thaw in the weather. This brief warming spell led to the sudden rise of modern civilization, and humans have taken advantage of it to spread and thrive. But this flowering has occurred during an interglacial period, meaning we will likely meet another ice age within the next ten thousand years. When it comes, our cities will disappear under mountains of snow and civilization will be crushed under the ice. We also face the possibility that the supervolcano under Yellowstone National Park may awaken from its long slumber, tearing the United States apart and engulfing the Earth in a choking, poisonous cloud of soot and debris. Previous eruptions took place 630,000, 1.3 million, and 2.1 million years ago. Each event was separated by roughly 700,000 years; therefore, we may be due for another colossal eruption in the next 100,000 years. On a scale of millions of years, we face the threat of another meteor or cometary impact, similar to the one that helped to destroy the dinosaurs 65 million years ago. Back then, a rock about six miles across plunged into the Yucatán peninsula of Mexico, sending into the sky fiery debris that rained back on Earth. As with the explosion at Toba, only much larger, the ash clouds eventually darkened the sun and led temperatures to plunge globally. With the withering of vegetation, the food chain collapsed. Plant-eating dinosaurs starved to death, followed soon by their carnivorous cousins. In the end, 90 percent of all life-forms on Earth perished in the wake of this catastrophic event. For millennia, we have been blissfully ignorant of the reality that **the Earth is floating in a swarm of potentially deadly rocks**. Only within the last decade have scientists begun to quantify the real risk of a major impact. We now know that there are several thousand NEOs (near-Earth objects) that cross the orbit of the Earth and pose a danger to life on our planet. As of June 2017, 16,294 of these objects have been catalogued. But these are just the ones we’ve found. Astronomers estimate that there are perhaps several million uncharted objects in the solar system that pass by the Earth. I once interviewed the late astronomer Carl Sagan about this threat. He stressed to me that “we live in a cosmic shooting gallery,” surrounded by potential hazards. It is only a matter of time, he told me, before a large asteroid hits the Earth. If we could somehow illuminate these asteroids, we would see the night sky filled with thousands of menacing points of light. Even assuming we avoid all these dangers, there is another that dwarfs all the others. Five billion years from now, the sun will expand into a giant red star that fills the entire sky. The sun will be so gigantic that the orbit of the Earth will be inside its blazing atmosphere, and the blistering heat will make life impossible within this inferno. Unlike all other life-forms on this planet, which must passively await their fate, we humans are masters of our own destiny. Fortunately, we are now creating the tools that will defy the odds given to us by nature, so that we don’t become one of the 99.9 percent of life-forms destined for extinction. In this book, we will encounter the pioneers who have the energy, the vision, and the resources to change the fate of humanity. We will meet the dreamers who believe that humanity can live and thrive in outer space. We will analyze the revolutionary advances in technology that will make it possible to leave the Earth and to settle elsewhere in the solar system, and even beyond. But if there is one lesson we can learn from our history, it is that humanity, when faced with life-threatening crises, has risen to the challenge and has reached for even higher goals. In some sense, the spirit of exploration is in our genes and hardwired into our soul. But now we face perhaps the greatest challenge of all: to leave the confines of the Earth and soar into outer space. The laws of physics are clear; sooner or later we will face global crises that threaten our very existence. Life is too precious to be placed on a single planet, to be at the mercy of these planetary threats. **We need an insurance policy**, Sagan told me. He concluded that we should become a “two planet species.” In other words, we need a backup plan. In this book, we will explore the history, the challenges, and the possible solutions that lie before us. The path will not be easy, and there will be setbacks, but we have no choice.

## 4

#### The standard is maximizing expected well-being.

#### 1] Death is bad and outweighs

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Contrary to those accounts, I would argue that it is death per se that is really the objective evil for us, not because it deprives us of a prospective future of overall good judged better than the alter- native of non-being. It cannot be about harm to a former person who has ceased to exist, for no person actually suffers from the sub-sequent non-participation. Rather, death in itself is an evil to us because it ontologically destroys the current existent subject — it is the ultimate in metaphysical lightening strikes.80 The evil of death is truly an ontological evil borne by the person who already exists, independently of calculations about better or worse possible lives. Such an evil need not be consciously experienced in order to be an evil for the kind of being a human person is. Death is an evil because of the change in kind it brings about, a change that is destructive of the type of entity that we essentially are. Anything, whether caused naturally or caused by human intervention (intentional or unintentional) that drastically interferes in the process of maintaining the person in existence is an objective evil for the person. What is crucially at stake here, and is dialectically supportive of the self-evidency of the basic good of human life, is that death is a radical interference with the current life process of the kind of being that we are. In consequence, death itself can be credibly thought of as a ‘primitive evil’ for all persons, regardless of the extent to which they are currently or prospectively capable of participating in a full array of the goods of life.81  In conclusion, concerning willed human actions, it is justifiable to state that any intentional rejection of human life itself cannot therefore be warranted since it is an expression of an ultimate disvalue for the subject, namely, the destruction of the present person; a radical ontological good that we cannot begin to weigh objectively against the travails of life in a rational manner. To deal with the sources of disvalue (pain, suffering, etc.) we should not seek to irrationally destroy the person, the very source and condition of all human possibility.82

#### 2] Pleasure and pain are the starting point for moral reasoning—they’re our most baseline desires and the only things that explain the intrinsic value of objects or actions

Moen 16, Ole Martin (PhD, Research Fellow in Philosophy at University of Oslo). "An Argument for Hedonism." Journal of Value Inquiry 50.2 (2016): 267.

Let us start by observing, empirically, that **a widely shared judgment about intrinsic value** and disvalue **is that pleasure is intrinsically valuable and pain is intrinsically disvaluable**. On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues. This inclusion makes intuitive sense, moreover, for **there is something undeniably good about the way pleasure feels and something undeniably bad about the way pain feels**, and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have. “Pleasure” and “pain” **are** here **understood inclusively**, as encompassing anything hedonically positive and anything hedonically negative. 2 The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. If you tell me that you are heading for the convenience store**, I might ask: “What for**?” This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?” This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: “Well, I want it for the pleasure of drinking it.” If I then proceed by asking “But what is the pleasure of drinking the soda good for?” the discussion is likely to reach an awkward end. **The reason is that the pleasure is not good for anything further; it is simply that for which going to the convenience store and buying the soda is good**. 3 As Aristotle observes: “**We never ask** [a man] **what** his **end is in being pleased, because we assume that pleasure is choice worthy in itself**.”4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” We take for granted that **if something is painful, we have a sufficient explanation of why it is bad**. If we are onto something in our everyday reasoning about values, it seems that **pleasure and pain are both places where we reach the end of the line in matters of value**. Although **pleasure and pain thus seem to be good candidates for intrinsic value and disvalue**, several objections have been raised against this suggestion: (1) that pleasure and pain have instrumental but not intrinsic value/disvalue; (2) that pleasure and pain gain their value/disvalue derivatively, in virtue of satisfying/frustrating our desires; (3) that there is a subset of pleasures that are not intrinsically valuable (so-called “evil pleasures”) and a subset of pains that are not intrinsically disvaluable (so-called “noble pains”), and (4) that pain asymbolia, masochism, and practices such as wiggling a loose tooth render it implausible that pain is intrinsically disvaluable. I shall argue that these objections fail. Though it is, of course, an open question whether other objections to P1 might be more successful, I shall assume that if (1)–(4) fail, we are justified in believing that P1 is true itself a paragon of freedom—there will always be some agents able to interfere substantially with one’s choices. The effective level of protection one enjoys, and hence one’s actual degree of freedom, will vary according to multiple factors: how powerful one is, how powerful individuals in one’s vicinity are, how frequent police patrols are, and so on. Now, we saw above that what makes a slave unfree on Pettit’s view is the fact that his master has the power to interfere arbitrarily with his choices; in other words, what makes the slave unfree is the power relation that obtains between his master and him. The difﬁculty is that, in light of the facts I just mentioned, there is no reason to think that this power relation will be unique. A similar relation could obtain between the master and someone other than the slave: absent perfect state control, the master may very well have enough power to interfere in the lives of countless individuals. Yet it would be wrong to infer that these individuals lack freedom in the way the slave does; if they lack anything, it seems to be security. A problematic power relation can also obtain between the slave and someone other than the master, since there may be citizens who are more powerful than the master and who can therefore interfere with the slave’s choices at their discretion. Once again, it would be wrong to infer that these individuals make the slave unfree in the same way that the master does. Something appears to be missing from Pettit’s view. If I live in a particularly nasty part of town, then it may turn out that, when all the relevant factors are taken into account, I am just as vulnerable to outside interference as are the slaves in the royal palace, yet it does not follow that our conditions are equivalent from the point of view of freedom. As a matter of fact, we may be equally vulnerable to outside interference, but as a matter of right, our standings could not be more different. I have legal recourse against anyone who interferes with my freedom; the recourse may not be very effective—presumably it is not, if my overall vulnerability to outside interference is comparable to that of a slave— but I still have full legal standing.68 By contrast, the slave lacks legal recourse against the interventions of one speciﬁc individual: his master. It is that fact, on a Kantian view—a fact about the legal relation in which a slave stands to his master—that sets slaves apart from freemen. The point may appear trivial, but it does get something right: whereas one cannot identify a power relation that obtains uniquely between a slave and his master, the legal relation between them is undeniably unique. A master’s right to interfere with respect to his slave does not extend to freemen, regardless of how vulnerable they might be as a matter of fact, and citizens other than the master do not have the right to order the slave around, regardless of how powerful they might be. This suggests that Kant is correct in thinking that the ideal of freedom is essentially linked to a person’s having full legal standing. More speciﬁcally, he is correct in holding that the importance of rights is not exhausted by their contribution to the level of protection that an individual enjoys, as it must be on an instrumental view like Pettit’s. Although it does matter that rights be enforced with reasonable effectiveness, the sheer fact that one has adequate legal rights is essential to one’s standing as a free citizen. In this respect, Kant stays faithful to the idea that freedom is primarily a matter of standing—a standing that the freeman has and that the slave lacks. Pettit himself frequently insists on the idea, but he fails to do it justice when he claims that freedom is simply a matter of being adequately (and reliably) shielded against the strength of others. As Kant recognizes, the standing of a free citizen is a more complex matter than that. One could perhaps worry that the idea of legal standing is something of a red herring here—that it must ultimately be reducible to a complex network of power relations and, hence, that the position I attribute to Kant differs only nominally from Pettit’s. That seems to me doubtful. Viewing legal standing as essential to freedom makes sense only if our conception of the former includes conceptions of what constitutes a fully adequate scheme of legal rights, appropriate legal recourse, justiﬁed punishment, and so on. Only if one believes that these notions all boil down to power relations will Kant’s position appear similar to Pettit’s. On any other view—and certainly that includes most views recently defended by philosophers—the notion of legal standing will outstrip the power relations that ground Pettit’s theory.

**3] Moral uncertainty means preventing extinction should be our highest priority.  
Bostrom 12** [Nick Bostrom. Faculty of Philosophy & Oxford Martin School University of Oxford. “Existential Risk Prevention as Global Priority.” Global Policy (2012)]  
These reflections on **moral uncertainty suggest** an alternative, complementary way of looking at existential risk; they also suggest a new way of thinking about the ideal of sustainability. Let me elaborate.¶ **Our present understanding of axiology might** well **be confused. We may not** nowknow — at least not in concrete detail — what outcomes would count as a big win for humanity; we might not even yet **be able to imagine the best ends** of our journey. **If we are** indeedprofoundly **uncertain** about our ultimate aims,then we should recognize that **there is a great** option **value in preserving** — and ideally improving — **our ability to recognize value and** to **steer the future accordingly. Ensuring** that **there will be a future** version of **humanity** with great powers and a propensity to use them wisely **is** plausibly **the best way** available to us **to increase the probability that the future will contain** a lot of **value.** To do this, we must prevent any existential catastrophe.

# Case

## Framing

#### Extinction is a relevant consideration that comes prior to their aff

Moten and Kelley, 17—professor of Performance Studies at New York University AND Gary B. Nash Professor of American History at UCLA (Fred and Robin D.G., “Robin D.G. Kelley & Fred Moten In Conversation,” transcribed from <https://www.youtube.com/watch?v=fP-2F9MXjRE>, 31:49-55:57, dml)

MOTEN: Well, um, first, I mean, the work I did around, um, you know, the ASA’s, um, you know, decision to endorse the academic and cultural boycott of Israel was really minimal and minor compared to a lot of other people who were really out front, um, and, and have been working tirelessly for that for many, many years. Um, and I think, you know, the, my contribution was more, you know, rhetorical in many ways in, in, in, and, and maybe, maybe theoretical only in the most minimal sense, in the sense that what I wanted to do was a couple of things. First, to recognize that, um, you know, let's say that the conditions of what people call modernity, um, in, in, in, in, or global modernity, that the fundamental conditions that make that up are, you know, settler colonialism. And I think we can talk about settler colonialism in ways that are broader than the normal way that we usually think of them as a set of violent and brutal relations between Europe and the rest of the world. Because I think it's really important. And, and, and again, our, our mutual friend and mentor Cedric Robinson, pointed this out emphatically, and in brilliant ways early on, that settler colonialism is also an intra-European affair. Um, and it's important to understand that. It's important to understand this historic relationship between settler colonialism in the enclosure of the commons, um, which is part and, part of the origins of, of what we now know or understand as capitalism. But if we understand that settler colonialism, that the transatlantic slave trade, um, and that, you know, the emergence of a set of philosophical formulations that essentially provide for us some modern conception of self that has as its basis a kind of possessive, heteronormative, patriarchal individuation, right? That's what it is to be yourself on the most fundamental level. You know, and if you ask anybody in the philosophy department, they'll tell you that that's true, you know, and they won’t be joking, right, that, um, that, these, that these constitute the basis of, of our modernity. But for most of the people who live in the world, actually for everybody who lives in the world, although most of the people in live in the world are actually able to both recognize this and say this, that modernity is a social and ecological disaster that we live, that we now attempt to survive. Okay? And if we take that up, then part of what's at stake is that we recognize that feminist and queer interventions against heteronormative patriarchy, that Black interventions against the theory and practice of slavery, which is ongoing, that indigenous interventions against settler colonialism constitute the general both practical and intellectual basis for not only our attempts to survive, but also our attempts to, as I said before, save the Earth. And, and I put it in terms that the great poet Ed Roberson puts it; not just to save the Earth, but to see the Earth before the end of the world. And this is an emergency that we're in now and it's urgent. Um, and I believe that there’s a specific convergence of black thought and indigenous thought that situates itself precisely in relation to, and is articulated through, the interventions of queer thought and feminist thought that we want to take up. And, and it, and it strikes me as, for me at least, it's, it's a way of taking up a kind an—it's, it’s a way of imagining how one might be able to, how we might be able to walk more lightly on the Earth. To honor the Earth as we walk on it, as we stand on it. To not stomp on it, to not stomp all over it, where every step you take is a claim of ownership. And, and this is one way to put it, would be to not so presumptuously imagine that the Earth can be reduced to something so paltry and so viciously understood as what we usually call home. This is part of the reason why the queer and the feminist critique is so important. It's a critique of a general problematic notion of domesticity. It's like another way of being on the Earth that doesn't allow you in some vicious and brutal way to claim that it is yours, right? Um, this is important and this is so, you know, often the methods that we use to claim the Earth as ours involved fences, borders. This manifests itself on a private level from household to household, but it also manifests itself on a national level, and at the level of the nation state, and it's not an accident that settler colonial states take it upon themselves to imagine themselves to be the living embodiment of the legitimacy of the nation state as a political and social form. For me, there's two reasons to be in solidarity with the people of Palestine. One is because they're human beings and they're being treated with absolute brutality, but the other is that there's a specific resistance to Israel as a nation state. And for my money, to be perfectly clear about this, I believe that this nation state of Israel is itself an artifact of antisemitism. If we thought about Israel and Zionism, not just as a form of racism that results in the displacement of Palestinians, but if we also think about them as artifacts of the historic displacement of Jews from Europe, right, in the same way that we might think of, let's say Sierra Leone or Liberia as artifacts of racist displacement, okay. If we think about it that way, okay, and another, and the reason I'm saying this is just to make sure that you know that there's a possible argument against the formulation that criticism of Israel is anti-Semitic when we know that Donald Trump is a staunch supporter, that people like Pat Robertson in the United States are staunch supporters that help us to the fact that you can be deeply anti-Semitic and support the state of Israel. These things go together. They're not antithetical to one another. So that it becomes important for us to be able to suggest that resistance to the state of Israel is also resistance to the idea of the legitimacy of the nation state. It's not an accident that Israel has taken upon itself, that when Israel takes upon itself, when the defense of Israel manifests itself as a defense of its right to exist, this is important. It's a defense, not just of Israel's right to exist, but of the nation state as a political form’s right to exist. And nation states don't have rights. What they're supposed to be are mechanisms to protect the rights of the people who live in them, and that has almost never been the case, and to the extent that they do protect the rights of the people who live in them, it's in the expense, it's at the expense of the people who don't, okay. So part of what's at stake, one of the reasons why it's at, it's important to pay particular attention to this issue, why we ought to resist the ridiculous formulation that singling out Israel at this moment is itself anti-Semitic is because it's important to recognize that Israel is the state. [KELLEY: Right.] MOTEN: For reasons that I think are totally bound up with antisemitism, right? Israel is the state that, insofar as it makes the claim about its right to exist, is also making the claim about the nation state’s right to exist as such. It's this, it's that same kind of argument that, I remembered the—and I'm sorry to keep going on so long, but there's—there's those formulations that people often make about Black people in it or indigenous people as if they were the essence of the human, right, so that every time Black people or indigenous people do something that supposedly we're not supposed to do, it constitutes a violation to the very idea of the human. Right, because somehow as a function of the nobility of our suffering, we constitute the very idea of humanity, right? And there's nothing more brutal, right? Nothing more vicious than having been being consigned to that position. Similarly, Israel as a function of anti-Semitism has now been placed in the position of protecting the very idea of the nation state. So for me, first and foremost, it's important to have solidarity with the Palestinian people, but second of all, it's important to actually have some solidarity with the Jewish people insofar as they can and must be separated from the Israeli state because ultimately the fate of the Jewish people, if it is tied to this, to the nation state of Israel, will be more brutal than anything that has yet been done or can be imagined, and I mean everything that you think I mean when I say that.

## Adv

#### Neolib is on a zero-growth trajectory now – it overcomes ecological damage and inequality – attempts at decorporatization and edgrowth makes population levels of unsustainable

Saunders ’16 (Harry Saunders – Senior Fellow at the Breakthrough Institute and managing director of Decision Processes Incorporated, International Expert on energy efficiency and consumption. “Does Capitalism Require Endless Growth?” Summer 2016, http://thebreakthrough.org/index.php/journal/issue-6/does-capitalism-require-endless-growth)

But it is important to distinguish these challenges from the sweeping claims made originally by Sweezy, Magdoff, and Foster and repeated today by prominent intellectuals and activists such as Naomi Klein and Bill McKibben. In the pages that follow, I will demonstrate that both neoclassical growth theory and empirical evidence suggest that capitalist economies do not require endless growth but are rather much more likely to evolve toward a steady state once consumption demands of the global population have been satisfied. Those demands demonstrably saturate once economies achieve a certain level of affluence. For these reasons, a capitalist economy is as likely as any other to see stable and declining demands on natural resources and ecological services. Indeed, with the right policies and institutions, capitalist economies are more likely to achieve high living standards and low environmental impacts than just about any other economic system. 1. From the window of his Manchester home in the mid-1840s, Marx’s colleague and contemporary Friedrich Engels looked out on a horrifying microcosm of what was happening in England and throughout the newly industrializing world — a stark imbalance between the luxurious wealth of capital owners and the miserable poverty of the workers they employed. Marx himself had witnessed firsthand this same imbalance, and over several decades of intense study came to propose that a core flaw of capitalism resides in excessive claims placed by privately owned capital as against labor on the economic value created by their combination. Herein lay the fundamental contradiction, in Marx’s view, which would bring an end to capitalism. As capitalists invested in ever-newer technologies, Marx predicted that their dependence on labor would decline. As this occurred, returns to labor in the form of earned wages would decline. If there were no return to households for their labor, there would be no income with which to consume goods produced by capital owners, nor savings that households might reinvest in new capital. An economic system in which declining returns to labor due to technological change immiserated most households was a system in which the market for goods sold by capital owners could not long survive. Notably, Marx did not dispute the necessity of capital for producing what households need, only who in society need control this resource. The problem, as Marx saw it, was that the surplus value created by labor was being unfairly conscripted by capital owners. In the first decades of the twenty-first century, a number of prominent analyses have suggested that Marx’s prophecy is perhaps coming true. MIT economists Erik Brynjolfsson and Andrew McAfee5 in recent years have suggested that continuing automation and rising labor productivity threaten mass unemployment, a problem foreseen by Keynes in 1930.6 Thomas Piketty, in his much-lauded book Capital in the Twenty-first Century7, finds that returns to capital have exceeded real economic growth in the industrialized world in recent decades, attributing that shift to ever-increasing concentration of limited capital in the hands of the few. The economist Robert Gordon8,9 finds that growth rates slow dramatically as societies become wealthier. The growth associated with the enormous rise in economic productivity and output associated with the transition from agrarian to industrial societies cannot be sustained as societies shift from industrial to post-industrial economies. Meanwhile, Paul Mason and others in the “post capitalism" movement contend that “an economy based on the full utilization of information cannot tolerate the free market.”10 His argument is that capitalist corporations will not prove capable of capturing value from the technology they deliver, value adequate to sustain them over time. Before considering whether these various challenges to advanced capitalist economies portend their collapse, it is important to note what none of these analyses suggest, which is that capitalism’s unquenchable demand for growth has run up against fundamental biophysical limits. If anything, these analyses suggest the opposite: that the limits to continuing growth in capitalist economies are social or technological, not biophysical. Brynjolfsson and McAfee, and Piketty, through technically different mechanisms, ultimately raise concerns that center around the immiseration of labor. Whether due to technological change, growing returns to capital, or both, all three centrally focus on declining wages and employment as the central challenge that threatens robust and equitable growth in capitalist economies. Mason, conversely, projects that technological change threatens returns to capital. The commodification of everything — material goods, knowledge, and information — ultimately brings with it an end to profits and hence both capital accumulation and capital reinvestment.11 Gordon, meanwhile, observes that there is simply no further techno-economic revolution that can replicate the one-time boost in economic productivity that comes with the shift from agrarian to industrial economies.12 If there is a common theme in these challenges to capitalist economies it is that all find their way, to one degree or another, back to Marx, not Malthus. The long-term challenge for capitalist economies, these analyses suggest, is too little growth, not too much. 2. The headwinds facing advanced industrial economies — stagnant growth and rising inequality — tell us something about the prospects for low- or zero-growth capitalist economies. Gordon’s analysis suggests that industrialized economies in relatively short order achieve a “satisficing” level of household consumption. Once that level is achieved, and once societies have built out the basic infrastructure of modernity — cities, roads, electrical grids, water and sewage systems, and the like — the growth rates characterized by the early stages of industrialization cannot be sustained by the knowledge and service sectors that increasingly dominate post-industrial societies. World Bank data clearly show this. Economic growth rates decline as countries become richer. Growth in GDP per capita in OECD countries slowed from an average of about 3 percent per year in the period 1961–1985 to about half of that in the period 1986–2014.13 Gordon’s analysis is supported not only by the long-term slowing of growth in industrialized economies but also by saturating household consumption in those economies. According to the World Bank, OECD growth in real household consumption per capita (consumption of both goods and services) has shown steady decline each decade from around 3 percent per year in the 1970s to around 1 percent per year since 2000.14 Brynjolfsson and McAfee, and Piketty, suggest that declining returns to households from their labor will drive worsening inequality and stagnant or declining wages. But that does not imply a declining material standard of living. The same technology gains and capital mobility that have eroded the power of labor in developed world labor markets have also persistently reduced the real prices of goods and services, making them ever more affordable. Even as nominal wage growth has slowed or stagnated in the US and other advanced developed economies, households are able to buy more with less of their incomes. This is because the cost of goods and services has grown even more anemically, inflation nearly disappearing in these countries over the same time period, meaning wages have grown in real terms. OECD data show that real wages OECD-wide have grown by about 1 percent per year between 2000 and 2014, including real growth in the United States, the United Kingdom, France, and Germany.15 Growth in the Scandinavian economies (Norway, Denmark, Sweden, and Finland) has exceeded this.16 This is true even at the bottom of the income distribution. Virtually all low-income homes in the United States today boast a refrigerator, modern heating and cooling, and electricity. Large majorities have dishwashers, washers and dryers, computers, cable television, and large-screen displays. Consumer goods and services once considered luxuries in the United States and other developed countries are today widely available and utilized by all citizens. That is mostly because home appliances and other goods today cost a small fraction, measured in the work time necessary to purchase them, of what they did thirty years ago.17,18 Of course, rising economic inequality raises a range of concerns beyond those related to access to goods and services. Higher rates of inequality may threaten social mobility, social cohesion, and perhaps even democratic governance. Even so, inequality appears to decline as nations industrialize and become wealthier. In rich Scandinavian countries (Sweden, Denmark), inequality has essentially halved since World War II.19 Declines recently are less impressive in the United States, United Kingdom, and other parts of Europe20, but, nonetheless, inequality remains reliably lower than in most developing economies21, where aggressive but still insufficient capital formation in the presence of large labor forces tends to result in higher levels of inequality. Moreover, increased capital mobility has driven declining inequality between countries, even as it may be worsening inequality within them. Thanks to global trade and international supply chains, firms have become increasingly able to locate production facilities in the developing world, where labor with the requisite skills can be employed at lower wages. As might be expected, labor in industrialized countries is not happy with this turn of events. But the result has been a long-term convergence of wages between producing and consuming countries, declining inequality globally, and a dramatic decline in absolute levels of poverty. The ILO reports that between 2000 and 2011, real average wages approximately doubled in Asia.22 In Latin America, the Caribbean, and Africa they also rose substantially, well above the developed world average23, while in developed economies they increased by only about 5 percent, far below the world average24, leading to what leading ILO observer Patrick Belser has dubbed “the great convergence”25 — a dynamic that was incidentally predicted many decades ago on theoretical grounds by famed economist Paul Samuelson.26 Meanwhile, according to the World Bank, the global share of people living on less than $1.90 per day (the World Bank definition of extreme poverty) fell from 44 percent in 1981 to 13 percent in 2012.27 Taken together, then, the dynamics transforming the global economy, while not without challenges, paint an interesting picture of slowing growth, converging global incomes, falling cost, and saturating demand for goods and services. Should these dynamics hold, it is not hard to imagine a future in which the global economy gravitates toward a prosperous and equitable zero-growth economy placing relatively modest demands on the biocapacity of the planet. But getting from here to there will require a number of further conditions. 3. For a capitalist economy to flourish without economic growth, population stabilization is a necessary condition. This condition is, of course, not limited to the capitalist model. It is implausible that any alternative to the capitalist model could deliver zero economic growth with a persistently growing global population. The second critical precondition for a steady state capitalist economy is that everyone must achieve a satisfactory level of consumption. This second precondition, in contrast to the first, is arguably unique to the capitalist model. The fundamental characteristic of capitalist economies, that which sets them apart from centrally managed socialist economies, is that capitalism, formally defined, is the economic system where the means of production resides in the hands of households. By households, of course, I mean private individuals. Some households own more capital than others, but most households in capitalist economies own some capital, whether as shareholders in public corporations, owners or investors in privately held businesses, beneficiaries of pension funds, or holders of corporate bonds. Irrespective of which particular households own it, all capital formation in a capitalist economy originates from households, be it directly or indirectly. In a capitalist economy, households run the show, both as producers and — as we shall see next — consumers. All else being equal, households decide how much they spend and how much they save, how much they work, and how much leisure time they wish to have. So long as there remains significant pent-up demand for work and consumption, those choices are limited. Households that don’t earn enough to consume all the goods they need don’t have a choice of whether or not to save or whether or not to work. But once those needs are met, work, consumption, savings, and leisure become a matter of choice. Households will work as much as they need to consume and save as much as they need or want. In an economy wherein households have globally realized a level of physical consumption they deem “satisficing,” aggregate consumption will precisely match individual household preferences among consumption, savings, and leisure time. For this reason, a steady state economy cannot be achieved in a capitalist economy until such time as households in the aggregate have deemed themselves to have achieved sufficient goods and services consumption. This is an outcome that in many parts of the world may not be so far away. In the rich Scandinavian countries, households today already forfeit significant added earnings in favor of increased leisure time. According to the OECD, the number of annual hours worked per employed worker has declined substantially in the 14-year period from 1999 to 2013 (0.2%–0.3%/year in Norway, Denmark, Sweden, the UK, and the US; 0.5%/year in Germany) while real wages in these countries have increased by about 1.3%/year over the same period.29 So long as consumption is unsaturated, labor is in surplus, and capital is scarce globally, growth will be required to meet pent-up demand for goods and services. Once that demand is met, however, either because wages have risen sufficiently to achieve satisficing levels of consumption, or the cost of goods and services has declined sufficiently to achieve the same outcome, continuing aggregate growth is no longer required, or likely. 4. If there is a problem with this picture, it is the issue raised by Mason and the post-capitalists. Why would anyone continue to invest in capital when returns have fallen to zero? The answer brings us back to the central role of households in capitalist economies. Given the means to do so, most households in capitalist economies forgo some consumption in order to save, allowing some of the economy’s production to be directed toward the creation of new physical capital to replace or grow the existing capital in place instead of consuming all production in the present period. Savings behavior by households, it turns out, is not driven by the returns that households expect, but rather by their desire to save for retirement. As demonstrated by Franco Modigliani and colleagues30 (work, not incidentally, that won Modigliani a Nobel Prize), households working toward retirement want made available to them financial resources to carry them through their post-retirement life without working, so they save for this. Even if they receive no positive return on the savings they have set aside, they will nonetheless be able to draw on them. Why invest rather than just stuffing savings under a mattress? Because even in a zero-growth economy, returns to capital are not always zero. When the supply of physical capital supported by household savings declines, returns to capital rise, inducing households to raid their mattresses and invest their savings in the hope of getting more back for retirement than they put in. Eventually, the system adjusts itself and capital returns again fall to zero (on average, economy wide). The result, then, is that in a zero-growth economy, households provide all the new capital needed for producers to replace capital stock that has deteriorated (depreciated) out of the system, but no more. There is no need to grow the capital stock in a zero-growth economy, just to sustain and refresh it. Household savings for retirement accomplish exactly this. But what about producers? Why continue to build replacement capital if the expected returns are zero? Again, because expected returns to replacement capital will not always be zero, even when average returns are. When investment in new capital falls, capital stock in the production economy falls as well, and with that employment falls, because the productive capacity of the economy shrinks. Lower output and lower wages in turn create new opportunities for profitable investment in new capital stock and increased employment. In a zero-growth economy, household savings invested match replacement capital needs, economy-wide capital returns on average approach zero, and production and consumption continue apace, neither growing nor declining. Theoretically, then, there is no particular reason that capitalist economies must collapse without growth. Empirically, a range of trends suggest that growth rates slow as societies become wealthier, not because labor becomes immiserated but rather for the opposite reason, because demand for goods and services saturates. 5. There remains, however, the problem of Malthus. A zero-growth steady state economy is not necessarily a sustainable one. Writing in the eighteenth century, at the dawn of the industrial revolution when even the British economy was still overwhelmingly agrarian, Malthus viewed the natural capital of deepest concern as being productive agricultural land. Today, Malthus’ argument is commonly cast more broadly in terms of our inattention to our planetary endowment (and the legacy we leave) in general. There are clear constraints on planetary endowment. The economic system resides within, and draws upon, the munificence of the planet’s natural ecosystems and depends on it for its functioning. There is growing recognition that these natural capital “services” are coming under increased strain as population grows and carbon emissions and other pollutants from economic activity challenge the capacity of natural capital to absorb economic waste and replenish the supply of natural capital services taken from it. To be truly sustainable, the natural capital of the planet must carry the economy indefinitely without suffering irreversible or catastrophic damage. Sustainability requires that natural capital have the capacity to absorb all waste products from human activities and to replenish itself sufficiently over time to maintain its stock, including, notably, its capacity to produce food. This requirement is as true of a steady state economy as of any other and applies to alternative economic systems as it does to capitalism. Human societies today consume prodigious quantities of natural capital. With much of the global population still living in deep poverty, that level of consumption is likely to grow dramatically in the coming century. But even if consumption did not grow, steady state consumption over time might still deplete reserves of natural capital sufficiently that it would be no longer able to support prevailing levels of consumption. For this reason, some have called31 not only for an end to economic growth but also for the even more radical step of “degrowing” the global economy. Degrowth of the economy can be achieved in one of two ways, reducing population or reducing per-capita consumption. These two levers are not unrelated. Malthus imagined that humans, like bacteria in a petri dish, reproduced geometrically in relation to resource availability. In fact, the opposite is the case. As human populations move from subsistence agrarian economies to modern industrial economies, and become more affluent in the process, fecundity levels decline. The human population over the past century has risen dramatically, but not because people were having more children. Rather, thanks to better public health and medical care, more children are surviving to adulthood, and adults are living much longer. The distinction is an important one. Fertility rates in virtually all developed economies are at or near replacement levels, meaning that native-born population levels are either stable or falling. Many emerging economies are at or near replacement levels of fertility as well, largely due to rising societal wealth and incomes. Indeed, differences among demographic models as to when and at what level global population will stabilize are almost entirely attributable to different assumptions about economic growth rates in Africa and Developing Asia. Accordingly, efforts to stabilize global population and reduce per-capita global consumption are potentially at cross-purposes. A global population that continues to live in subsistence agrarian economies will likely be much larger than one that has fully made the transition to an urban and industrial economy, even as the latter consumes at significantly higher levels. Advocates of degrowth propose to address this paradox through a process they call “shrink and share,” proposing not only to limit total global consumption but also to redistribute it equitably. A more equitable distribution of a smaller pie would presumably allow those remaining in deep agrarian poverty to make the leap to modern living standards and fertility rates. Such a scheme might be possible theoretically but as a practical matter would appear to be unlikely, requiring some combination of voluntary austerity and redistribution at a global scale or, lacking that, some form of global government that would mandate limits on personal consumption and would forcibly redistribute wealth from richer precincts of the global economy to poorer ones. Even if such a scenario were plausible, it is not clear that it would actually degrow the economy. Global per-capita income today is about $10,000–$15,000, depending on the accounting method.32 Even with perfect redistribution of wealth, this level of income would probably be insufficient to achieve something approximating modern living standards globally. Actually degrowing the economy significantly from present levels would probably leave large populations stranded in deep agrarian poverty. And to provide a first-world perspective, such a perfect redistribution would require — for global GDP to be maintained at its current level — High Income countries (World Bank designated) to reduce their present GDP by between about 60 percent to 70 percent, again depending on the accounting method.33 This surely qualifies as exceptional austerity, voluntary or otherwise. There is also the small matter of whether such a scheme could actually sustain itself economically or ecologically. It is not clear that such a scheme could work without large-scale collectivization, as it is not clear that the incentives necessary to keep producers producing, savers saving, and investors investing in new or replacement capital voluntarily could be sustained. The history of the collectivization of production has not been good for either living standards or the environment. Incomes stagnate as more work often does not bring greater income. Stagnant incomes bring lower savings and capital reinvestment, and lower capital reinvestment brings aging capital stock and infrastructure and ultimately stagnant or declining economic productivity. These problems become self-reinforcing. Incomes stagnate further with declining productivity, and with declining incomes comes less surplus either to redistribute or invest in new capital and infrastructure. Aging capital stock and declining productivity also bring greater calls on natural capital. In short, natural capital is not the only endowment that societies erode at their own risk. Societal wealth, the product of economic surplus made possible by rising economic productivity, is also an endowment that grows as societies develop economically. Erosion of that endowment erodes the surplus necessary to reinvest in new capital that is capable of sustaining living standards while requiring declining calls on natural capital. 6. There is another path to stable and declining calls on the planet’s endowment of natural capital. Malthus erred not only because he failed to understand the relationship between fertility rates and food consumption but also because he underestimated the rate at which agricultural productivity would improve. By growing more food on every acre of land, human societies avoided mass starvation. More broadly, rising economic productivity due to technological advances raises incomes, creates economic surplus that can be reinvested in new capital and infrastructure, and produces more economic output from less natural capital input. So long as there are large populations living in deep poverty, gains in economic productivity will be put toward greater output, assuring that some or all of the efficiencies associated with productivity gains will be put toward greater production and consumption. But once everyone on the planet achieves a satisfactory level of consumption, consumption of goods and services should stabilize while calls on natural capital should stabilize and then decline.34 By satisfactory levels of consumption, what I mean is a standard of living that would be recognizable to the average citizen of an advanced developed economy — modern housing, an ample and diverse diet, sufficient electricity for run-of-the-mill household appliances, roads, hospitals, well-lit public spaces, garbage collection, and so on. The saturation of demand for goods and services in advanced developed economies in the latter half of the twentieth century provides a reasonable proxy for the point at which most people start to see diminishing utility from further household consumption. In a zero-growth world, in which household consumption has saturated while labor- and resource-sparing technological change continues, leisure time grows continually over time while societal calls on natural capital decline.35 Given these conditions, how quickly a zero-growth economy is achieved, and calls on natural capital globally peak and then decline, depends upon three closely related phenomena: how rapidly global population stabilizes, how rapidly incomes among the global poor rise, and the rate at which resource-sparing technological change occurs. 7. Getting to a zero-growth steady state economy with declining calls on natural capital will require, then, sustaining — or better yet, accelerating — two trends that capitalism has proven better able to advance than any alternative economic arrangement to date: lifting large agrarian populations out of poverty, and improving resource productivity through technological change. The former, as noted above, is also the key to stabilizing global population. In these regards, standard neoclassical models and theory suggest an idealized and uniform expression of capitalism. The means of production is privately owned by households. Households are free to purchase whatever goods and services they wish in an open, free market. Households are free to allocate their budget between current consumption and saving for the future, and to allocate their time between work and leisure. Producers act to maximize profits and are constrained by perfect competition. In reality, capitalism takes many hybrid forms in economies around the world. The trends elaborated above and the many imperfect (from the admittedly reductive and formalized view of economic theorists) expressions of capitalism and markets around the world would suggest that complete private ownership of all production, perfect competition, and minimal government intervention in markets are not necessary for the basic dynamics described above to sustain themselves, and are unlikely to obtain for many generations in any case. Scandinavian countries redistribute more income than other OECD economies. Japan, France, and South Korea have more actively engaged in industrial policy and centralized economic planning than, say, the United States or Great Britain. And while these, along with a range of other indigenous factors, appear to account for some significant variation in key trends associated with growth rates, wealth distribution, dematerialization, and calls on natural capital across national economies, the broader trends are robust. As economies develop and become wealthier, and as populations are integrated into the formal, market economy, productivity rises, calls on natural capital in relation to economic output fall, poverty is eradicated, and inequality, both within nations and between them, declines.36,37,38 What is important is that a set of processes are established and sustained — capital formation, integration of everyone into the cash and wage economies, rising labor, capital, and resource productivity, and the generation of economic surplus for savings and reinvestment in new capital and infrastructure. These dynamics are not inconsistent with a range of state interventions in the private economy. Social insurance to reduce economic insecurity, public investment in infrastructure and the creation of public or heavily regulated private utilities to provide for basic services such as water, sewage, and electricity, antitrust and other measures to assure fair and competitive markets, public support for basic science, applied research and development, and commercialization of new technologies — all represent measures national governments in various contexts have implemented to good effect and that, depending on the circumstance, may even be essential to sustaining and accelerating rising incomes and resource productivity. But we should also not overlook the underlying engine that has driven rising prosperity, slowing population growth rates, and increasing resource efficiency. Standing before the offices of the Federal Trade Commission in Washington, DC, is a sculpture depicting a heavily muscled man trying to restrain an even more heavily muscled workhorse. The horse represents the massive power of trade; the man represents the obligation of government to tame and bring into the service of society this wild and vibrant power. This sculpture could have been placed just as meaningfully in front of the Securities and Exchange Commission or the Environmental Protection Agency, or indeed any government entity in any country charged with harnessing and guiding the forces unleashed by capitalism. But the Federal Trade Commission sculpture also implicitly conveys a forceful warning. Tame it as you will. But don’t kill the horse we need to ride into the future.

#### Next, CCS. Markets are key.

Gregory F. Nemet et al., Associate Professor, La Follette School of Public Affairs, University of Wisconsin–Madison, Martina Kraus, German Institute for Economic Research Vera Zipperer, German Institute for Economic Research, November, 2016, The Valley of Death, the Technology Pork Barrel, and Public Support for Large Demonstration Projects, La Follette School Working Paper No. 2016-007

Because the ultimate (but not immediate) goal of supporting demonstrations is to facilitate widespread adoption, demand and thus markets are of course key (Kingsley et al., 1996). In climate change, policies are central to those markets (Taylor et al., 2003; Zhou et al., 2015), thus credibility in those policies is also central (Rai et al., 2010; Finon, 2012). But it is striking how many demonstration programs confronted markets that involved negative shocks around the time that projects came on-line—we see it in synfuels, biofuels, and solar thermal electricity (Figure 9), and CCS (Figure 10). The 1.9 year average lag from project initiation to time on-line is crucial. It would be a mistake to assume a Hotelling price path in which prices of an exhaustible resource (e.g. oil, atmospheric storage of CO2) rise at a constant pure rate of time preference. In this case the relevant price is the level at which avoided CO2 emissions are remunerated. Rather the experience of the past suggests we are more likely to see shocks and boom–bust cycles (Krautkraemer, 1998; Zaklan et al., 2011). We see it in our data in the prices related to each demonstration program (Figure 8). Lupion and Herzog (2013) attribute the failure of the NER300 program to stimulate the construction of any CCS projects to 4 factors: competition with renewables, project complexity, low carbon prices, and a combination of fiscal austerity and weak climate policy around the global financial crisis. Note that three of the four problems involved future demand, not the funding structure itself. Demonstrations need markets that pay off innovation investments not just under a steadily increasing Hotelling-style market, but under a broad range of market conditions. Features of robust demand pull include niche markets (Kemp et al., 1998), hedging across jurisdictions (Nemet, 2010), and flexible production (Sanchez and Kammen, 2016). Government price guarantees have played an important role as we have seen on synfuels, solar thermal electricity, and on a smaller scale, photovoltaics.

#### Try or die for CCS to solve warming

Moniz 9/23/19 - 13th Secretary of Energy (2013 to 2017) and is the founder and CEO of the Energy Futures Initiative

Fredd Krupp is president of the Environmental Defense Fund, Ernest Moniz, “Cutting Climate Pollution Isn’t Enough — We Also Need Carbon Removal,” Text, TheHill, September 23, 2019, <https://thehill.com/opinion/energy-environment/462609-cutting-climate-pollution-isnt-enough-we-also-need-carbon-removal>.

It has been almost four years since the Paris climate agreement was signed. But as leaders gather in New York this week for the United Nations Climate Change Summit, the world remains far off track from meeting the Paris objective of limiting global warming to well below 2 degrees Celsius -- and pursuing efforts at 1.5 degrees. To meet that target, the world must achieve a 100 percent clean economy — one that produces net zero emissions, or no more climate pollution than can be removed from the atmosphere — soon after mid-century, with the United States and other advanced economies reaching that milestone no later than 2050. It’s a daunting but doable task. The consequences of falling short are enormous. This year, the U.S. government’s fourth National Climate Assessment documented the huge economic and social impacts of unchecked warming. The Pentagon has repeatedly warned of the impacts on national security and our troops. Achieving a 100 percent clean economy will require a swift transition to renewables and other zero-carbon energy sources. But we also need to face the reality that meeting the Paris target will require taking carbon out of the atmosphere at massive scale. In part, that’s because eliminating emissions will be very challenging for some sectors, especially the transportation industry and agriculture. Removing carbon from the atmosphere would also bring concentrations down, helping to stabilize the climate at safer levels. So, the push for clean energy must be supplemented by a suite of technologies known as carbon dioxide removal (CDR). It is not a question of what we’d prefer. It’s a question of insurmountable math. The crucial role carbon removal must play is becoming more widely recognized. The 2018 Intergovernmental Panel on Climate Change report stressed the importance of carbon removal, and the U.S. National Academies of Sciences, Engineering and Medicine late last year estimated that ten billion tons of CO2 will need to be pulled from the atmosphere annually by 2050, and double that by 2100. For context, today’s global emissions are less than 40 billion tons per year. If the 10 billion tons of CO2 from CDR were stored underground, that would be roughly double the world’s annual oil production. The good news is that there are a surprisingly large number of promising pathways for carbon dioxide removal. Nature-based approaches include reforestation and forest management as well as agricultural practices that increase carbon stored in soils. Some of the attendant challenges include competition for land and permanence of the carbon sequestration. Technological approaches include direct air capture — machines that actually suck carbon from the air — and technologically-enhanced natural processes, such as plants genetically modified with deep roots to fix carbon in the soil; enhanced mineralization, which uses certain reactive rocks to bind with carbon from the air; and accelerated ocean uptake in phytoplankton. These technologies are immature and require considerable research, development and demonstration to ensure viability and affordability at very large scale. Despite the urgency, there is no dedicated federal effort to develop these crucial technologies; existing programs are piecemeal and largely focused on sequestering emissions from industrial and electricity generating sources. The National Academies recommended the rapid establishment of a robust, focused, scalable and accelerated federal research program spanning the Departments of Energy and Agriculture, the National Oceanic and Atmospheric Administration and the National Science Foundation, among others. Such a program would encompass the full range of technological pathways that can remove CO2 from the environment. ‘’Clearing the Air,’’ an analysis of CDR’s value and a proposed plan to deploy it, has been completed by the Energy Futures Initiative. Over the next decade, the program scale would be about a billion dollars a year. Carbon dioxide removal is not a magic bullet. We must do everything we can to deploy innovative low- and zero-carbon methods to generate electricity, heat homes, fuel vehicles, and power industry, creating new economic opportunities in the process. Tackling the climate crisis also requires placing a declining limit and a price on carbon pollution, as well as a significant increase in energy technology innovation and deployment across the board. But CDR is also not a “Plan B.” It is a critical part of any “Plan A” for climate, a necessary complement to emission reduction. It can provide more flexibility and optionality in policy planning, which could ease the transition to a carbon-neutral economy while minimizing transition costs and providing greater assurance that science-based climate goals can be met in a timely manner. It would eventually enable a net negative global economy that could bring the atmospheric carbon concentrations down — and global temperatures with it. We have delayed meaningful action for far too long. As a result, the scale and urgency of the challenge is such that we cannot simply work on doing better in the future. We need to correct what we did in the past. Carbon removal is the enabler.

#### Rejection of capitalism causes massive transition wars

Harris 03. Lee, Analyst – Hoover Institution and Author of The Suicide of Reason, “The Intellectual Origins of America-Bashing”, Policy Review, January, http://www.hoover.org/publications/policyreview/3458371.html

This is the immiserization thesis of Marx. And it is central to revolutionary Marxism, since if capitalism produces no widespread misery, then it also produces no fatal internal contradiction: If everyone is getting better off through capitalism, who will dream of struggling to overthrow it? Only genuine misery on the part of the workers would be sufficient to overturn the whole apparatus of the capitalist state, simply because, as Marx insisted, the capitalist class could not be realistically expected to relinquish control of the state apparatus and, with it, the monopoly of force. In this, Marx was absolutely correct. No capitalist society has ever willingly liquidated itself, and it is utopian to think that any ever will. Therefore, in order to achieve the goal of socialism, nothing short of a complete revolution would do; and this means, in point of fact, a full-fledged civil war not just within one society, but across the globe. Without this catastrophic upheaval, capitalism would remain completely in control of the social order and all socialist schemes would be reduced to pipe dreams.

#### Extinction

Nyquist 5. J.R. renowned expert in geopolitics and international relations, WorldNetDaily contributing editor, “The Political Consequences of a Financial Crash,” February 4, www.financialsense.com/stormw...2005/0204.html

Should the United States experience a severe economic contraction during the second term of President Bush, the American people will likely support politicians who advocate further restrictions and controls on our market economy – guaranteeing its strangulation and the steady pauperization of the country. In Congress today, Sen. Edward Kennedy supports nearly all the economic dogmas listed above. It is easy to see, therefore, that the coming economic contraction, due in part to a policy of massive credit expansion, will have serious political consequences for the Republican Party (to the benefit of the Democrats). Furthermore, an economic contraction will encourage **the formation of anti-capitalist majorities and a turning away from the free market system. The danger here is not merely economic. The political left openly favors the collapse of America’s strategic position abroad. The withdrawal of the United States from the Middle East, the Far East and Europe would catastrophically impact an international system that presently allows 6 billion people to live on the earth’s surface in relative peace. Should anti-capitalist dogmas overwhelm the global market and trading system that evolved under American leadership, the planet’s economy would contract and untold millions would die of starvation. Nationalistic totalitarianism, fueled by a politics of blame, would once again bring war to Asia and Europe.** But **this time the war would be waged with mass destruction weapons** and the United States would be blamed because it is the center of global capitalism. Furthermore, **if the anti-capitalist party gains power in Washington, we can expect to see policies of appeasement and unilateral disarmament enacted. American appeasement and disarmament, in this context, would be an admission of guilt before the court of world opinion. Russia and China,** above all, **would exploit this** admission **to justify aggressive wars, invasions and mass destruction attacks**. A future financial crash, therefore, must be prevented at all costs.

#### Independently profit motive key to effective resource management

Fitzmaurice 15. Matthew, CEO, EcoAlpha Asset Management LLC. “ONLY CAPITALISM CAN SAVE THE PLANET,” Ensla. 3/23/2015. http://ensia.com/voices/only-capitalism-can-save-the-planet/

Here’s the thing, though: where there are problems to be solved, there’s money to be made. And where there’s money to be made, we awaken one of the world’s most powerful forces for change: capitalism. ¶ Of course capitalism has played a starring role in distressing the planet’s resources. Historically, the combination of unchecked industry, a readiness to externalize costs and a relentless thirst for growth have plundered and polluted the earth. It’s not a debate, but simple fact that our population size and economies cannot continue on their present trajectories without exhausting the world’s resources. Yet, a rapidly expanding global middle class — increasingly urbanized and hungry for protein — threatens further and accelerating distress. ¶ The hopeful news is that businesses, with their almost singular focus on economic self-interest, and governments, motivated by a variety of interests, are beginning to recognize and address in earnest these inevitable problems. ¶ Today, the businesses that develop practical and affordable solutions to burdened resource problems will end up being the world’s most profitable companies. No longer can they be considered “sustainability” businesses. They are everyday businesses with a long view, targeting problems that are not going away. That’s smart business. Burdened resources have become a strong economic driver for businesses of all sizes, in all industries everywhere to spend and change — and one that will only grow in scope and intensity over time. ¶ The companies that provide effective solutions to burdened resources will provide superior risk-adjusted returns to their investors as business and governments accelerate their solutions spending out of their own economic self-interest. And because the products, technologies and services these companies provide are common solutions to global problems — and are therefore exponentially repeatable — these investments will have amplified positive impact on global resource scarcity issues. ¶ Too often people have a narrow view of these solutions, thinking only of solar panels and windmills. But solutions are enormously diverse: They include, among many others, agricultural drones that monitor soil conditions, smart irrigation technology that delivers water only where and when it’s really needed, more efficient distributed energy generation and component suppliers that make cars use less gas. ¶ We face a new reality in which our economic self-interest and the long-term well-being of the planet are coming into alignment.¶ As a whole, the human race has a poor track record when it comes to altruism. Although there are a great many saints among us who spend — and even sacrifice — their lives to help others, most of us are hard pressed to take care of ourselves and our families. We have a much better track record when it comes to investing money in our own self- interest, which has fueled the unprecedented innovation, economic and life-expectancy growth of the past century. ¶ In the past, many people who invested in sustainable solutions were motivated principally by conscience, willing to accept reduced returns in order to invest their money in a way that was consistent with their beliefs and convictions — be they religious, social or environmental. Now, however, we face a new reality in which our economic self-interest and the long-term well-being of the planet are coming into alignment. Because we have to face the reality of burdened resources, there’s money in it. ¶ Recently, some asset managers have based investments on environmental, social and governance screening, betting that good corporate citizens are inherently better-managed companies, which will therefore be more profitable over time. Increasingly, however, ESG screening is becoming more pervasive and will likely over time become commonplace, robbing this sort of screening as a differentiator when making investment decisions. ¶ The primary goal for investing in sustainable solutions is to achieve superior risk-adjusted returns. Companies that provide solutions to the issues of burdened resources will be the recipients of a massive global spend cycle, no matter one’s motivation. The fact that one’s investment is also part of the solution rather than the problem is worth getting excited about. Self-interest is what moves markets. According to McKinsey’s report, How to make Green Growth the new normal, “In order to mobilize the US$3 trillion a year that will be needed to build a resource-efficient growth model, investing in the markets of the future needs to be seen as possessing superior risk-return characteristics.”¶ No government subsidy or charity case can move the needle for long. Only capitalism has the power to retool industries, reshape economies and rebuild infrastructure across the planet. It’s a big part of what got us into this mess, but it’s also what will get us out.

#### Ineffective resource management degrades public health, kills global air quality, and causes tensions over water scarcity in South Asia—culminates in extinction

Thompson 13. Thomas, President of Analytics Inc., a financial research and economic analysis firm. Citing Wang Shucheng, China’s former minister of water resources. “Choking on China,” Foreign Affairs. 6/8/2013. https://www.foreignaffairs.com/articles/china/2013-04-08/choking-china

The dangers of China’s environmental degradation go well beyond the country’s borders, as pollution threatens global health more than ever. Chinese leaders have argued that their country has the right to pollute, claiming that, as a developing nation, it cannot sacrifice economic growth for the sake of the environment. In reality, however, China is holding the rest of the world hostage -- and undermining its own prosperity.¶ According to the World Bank, only one percent of China’s 560 million urban residents breathe air considered safe by EU standards. Beijing’s levels of PM2.5s -- particles that are smaller than 2.5 micrometers in diameter and can penetrate the gas exchange regions of the lungs -- are the worst in the world. Beijing’s 2012 March average reading was 469 micrograms of such particles per cubic meter, which compares abysmally with Los Angeles’ highest 2012 reading of 43 micrograms per cubic meter.¶ Such air pollution contributed to 1.2 million premature deaths in China in 2010, according to the Global Burden of Disease Study. The unrelenting pace of construction of coal-fired power plants is only making matters worse. In his recent monograph, Climate Change: The China Problem, environmental scholar Michael Vandenbergh writes, “On average, a new coal-powered electric plant large enough to serve a city the size of Dallas opens in China every seven to ten days.” The lack of widespread coal-washing infrastructure and scrubbers at Chinese industrial facilities exacerbates the problem.¶ Carbon dioxide emissions from cars in China are also growing exponentially, replacing coal-fired power plants as the major source of pollution in major Chinese cities. Deutsche Bank estimates that the number of passenger cars in China will reach 400 million by 2030, up from today’s 90 million. And the sulfur levels produced by diesel trucks in China are at least 23 times worse than those in the United States. Acid rain, caused by these emissions, has damaged a third of China’s limited cropland, in addition to forests and watersheds on the Korean Peninsula and in Japan. This pollution reaches the United States as well, sometimes at levels prohibited by the U.S. Clean Water Act. In 2006, researchers at the University of California–Davis discovered that almost all of the harmful particulates over Lake Tahoe originated in China. The environmental experts Juli Kim and Jennifer Turner note in their essay “China’s Filthiest Export” that “by the time it reaches the U.S., mercury transforms into a reactive gaseous material that dissolves easily in the wet climates of the Pacific Northwest.” At least 20 percent of the mercury entering the Willamette River in Oregon most likely comes from China. Black carbon soot from China also threatens to block sunlight, lower crop yields, heat the atmosphere, and destabilize weather throughout the Pacific Rim.¶ China’s use of fresh water resources also threatens those beyond its borders. As Mark Twain reportedly said, in reference to California in the late nineteenth century, “Whiskey is for drinking; water is for fighting over.” The sentiment holds true in modern-day Asia as well. Asia’s per capita fresh water availability is less than half the global average. China and India, for example, are home to 40 percent of the world’s population but make do with ten percent of the world’s fresh water. China is guzzling and polluting this limited resource at an alarming rate. The country has dammed every major river on the Tibetan plateau, including the Mekong, the Salween, the Brahmaputra, the Yangtze, the Yellow, the Indus, the Sutlej, the Shweli, and the Karnali, and there are large-scale plans to dam others. Of the 50,000 largest dams in the world, more than half are in China. As a result, China now controls the river water supply to 13 nearby countries but so far has refused to sign any treaties or cooperate with other countries on water issues. Beijing also voted against the UN attempt to regulate water sharing in the region. China’s former minister of water resources, Wang Shucheng, described China’s water policy as “fight for every drop of water or die.” This philosophy, combined with China’s unabated pursuit of economic development, will have profoundly destabilizing consequences

for the region, both politically and environmentally.¶ Unfortunately for China, compromising the environment and health in pursuit of economic growth is not a sustainable strategy. The threat of water scarcity and the adverse domestic health effects of pollution darken China’s future. Pollution-related illnesses are soaring. A recent social media campaign led by locals and international activities shed light on the growing phenomena of “cancer villages” -- areas where water pollution is so bad that it has led to a sharp rise in diseases like stomach cancer. China’s own Ministry of Environmental Protection has concluded that 70 percent of the country’s major waterways are heavily polluted. According to Scott Moore of the Sustainability Science Program at Harvard’s Kennedy School of Government, pollutants have even seeped into the country’s subsurfaces, with more than half of monitored wells deemed unsafe to use for drinking water. The China Geological Survey now estimates that 90 percent of China’s cities depend on polluted groundwater supplies. Water that has been purified at treatment plants is often recontaminated en route to homes. China has plundered its groundwater reserves, drilling massive underground tunnels that have even caused some cities to literally sink.¶ China has also completely botched its waste-removal efforts. Eighty percent of the East China Sea, one of the world’s largest fisheries, is now unsuitable for fishing, according to Elizabeth C. Economy, a China and environmental expert at the Council on Foreign Relations. Most Chinese coastal cities pump at least half of their waste directly into the ocean, which causes red tides and coastal fish die-offs. According to the World Wildlife Fund, the country is now the largest polluter of the Pacific Ocean.¶ The economic costs of pollution have been the focus of various government-backed studies in China. A recent study by the Chinese Academy of Environmental Planning found that environmental damage to forests, wetlands, and grasslands shaved 3.5 percent off China’s 2012 GDP. The World Bank puts the total cost of China’s environmental degradation in the late 1990s at between 3.5 and 8 percent of GDP. China’s pollution problem is holding back its economy -- and poisoning its own people and the rest of the world in the process. The international community should push China to realize that if it continues to ravage the environment, it will be unable to secure its future health and prosperity -- or avoid a global disaster.

#### Cap prevents war – property rights and empirics

Harrison 11. Mark, Department of Economics, University of Warwick, Centre for Russian and East European Studies, University of Birmingham, Hoover Institution on War, Revolution, and Peace, Stanford University, “Capitalism at War”, Oct 19 http://www2.warwick.ac.uk/fac/soc/economics/staff/academic/harrison/papers/capitalism.pdf  
Capitalism’s Wars America is the world’s preeminent capitalist power. According to a poll of more than 21,000 citizens of 21 countries in the second half of 2008, people tend on average to evaluate U.S. foreign policy as inferior to that of their own country in the moral dimension. 4 While this survey does not disaggregate respondents by educational status, many apparently knowledgeable people also **seem to believe that, in the modern world, most wars are caused by America**; this impression is based on my experience of presenting work on the frequency of wars to academic seminars in several European countries. **According to the evidence, however, these beliefs are mistaken**. We are all aware of **America’s wars, but they make only a small contribution to the total. Counting all bilateral conflicts** involving **at least the show of force from 1870 to 2001, it turns out that the countries that originated them come from all parts of the global income distributio**n (Harrison and Wolf 2011). **Countries that are richer, measured by GDP per head, such as America do not tend to start more conflicts**, although there is a tendency for countries with larger GDPs to do so. **Ranking countries by the numbers of conflicts they initiated, the United States, with the largest economy, comes only in second place; third place belongs to China. In first place is Russia** (the USSR between 1917 and 1991). **What do capitalist institutions contribute to the empirical patterns in the data**? Erik Gartzke (2007) has re-examined the hypothesis of the “democratic peace” based on the possibility that, **since capitalism and democracy are highly correlated across countries and time, both democracy and peace might be products of the same underlying cause, the spread of capitalist institutions**. It is a problem that our historical datasets have measured the spread of capitalist property rights and economic freedoms over shorter time spans or on fewer dimensions than political variables. For the period from 1950 to 1992, Gartzke uses a measure of external financial and trade liberalization as most likely to signal robust markets and a laissez faire policy. **Countries that share this attribute of capitalism above a certain level, he finds, do not fight each other, so there is capitalist peace as well as democratic peace**. Second, **economic liberalization** (of the less liberalized of the pair of countries) **is a more powerful predictor of bilateral peace than democratization, controlling for the level of economic development and measures of political affinity.**

#### Cap solves environment – innovation and profit incentive

Bailey, science correspondent, ’14 (Ronald; 10/31/14; award-winning science correspondent; Reason, “Is Capitalism Environmentally Unsustainable?”, http://reason.com/archives/2014/10/31/is-capitalism-unsustainable?n\_play=54547667e4b0dcc26e7944fe)

Human activity is remaking the face of the Earth: transforming and polluting the landscape, warming the atmosphere and oceans, and causing species to go extinct. The orthodox view among ecologists is that human liberty—more specifically economic activity and free markets—is to blame. For example, the prominent biologist-activists Paul and Anne Ehrlich of Stanford University recently argued in a British science journal that the environmental problems we face are driven by "overpopulation, overconsumption of natural resources and the use of unnecessarily environmentally damaging technologies and socio-economic-political arrangements to service Homo sapiens' aggregate consumption." The Ehrlichs urge the "reduction of the worship of 'free' markets that infests the discipline" of economics. But the notion that economic activity and free markets are antithetical to the flourishing of the natural world is complicated by the fact that the countries with the biggest environmental problems today, and the least means and apparent interest in addressing them, are not the liberalized ones with advanced capitalist economies but the ones with weak or nonexistent democracies and still-developing economies. So is it really the case that liberty and the environment are simply opposed? Does the good of one come only at the expense of the other? Or can liberty and a flourishing natural environment reinforce one another, the good of one encouraging the good of the other? Can economic activity under a system of liberty be environmentally sustainable in the long run? ... Many of these academics—though not all—acknowledge that market economies on the whole have greatly improved the lot of humanity over the past few centuries, leading to better standards of living, higher levels of education, and more civil and political rights. But they argue that the system of liberty produces accumulating externalities that will eventually drive civilization to self-destruction. Either human beings start restructuring civilization soon, the Ehrlichs warn, or "nature will restructure civilization for us." The Lockean response to these academics' worries is that free-market capitalism is as much about growing inward as outward—about learning to derive progressively more value from a finite supply of natural resources, so that we need not consume ever more of those resources. On this understanding, there need be no contradiction between meeting human material needs and preserving a large portion of the natural environment. So we have two broad views of the sustainability of the system of liberty, and they could hardly be more opposed: one of steady growth and self-reinforcing gains in the efficient use of natural resources, and one in which this growth may be maintained for a deceptively bountiful period of human history before it collapses in on itself. ... We can now begin to see the shape of an answer to our initial question of whether liberty and the natural environment must necessarily be opposed. In early stages of modern economic development, as liberty is unleashed in open-access orders, people convert relatively plentiful but unproductive nature into more productive but relatively scarcer human labor—that is, higher population—and manufactured capital. In those early stages, liberty and the environment function as what economists call "substitute goods," with more liberty resulting in less demand for the environment in its natural state. In such societies, fertility rates remain high and environmental amenities and quality continue to deteriorate. But at later stages of economic development, human and manufactured capital become so effective, thanks especially to technological progress, that the environment can be returned to a more natural state. And since such societies are more prosperous, they can better afford the costs of environmental regulations, even inefficient ones. ... Free markets are the most robust mechanism ever devised by humanity for delivering rapid feedback on how decisions turn out. Profits and losses discipline people to learn quickly from and fix their mistakes. By contrast, top-down bureaucratization tends to stall innovation and to make it more difficult for people and societies to adapt rapidly to changing conditions, economic and ecological. Centrally planned economies fail; centrally planning the world's ecology will fail as well. Our aim must be to find ways for liberty and the environment to flourish together, not to sacrifice one in the vain hope of protecting the other.

#### Capitalism is key to space habitation

**Spriny 16** [Todd Spring, word enthusiast, 3 June 2016, Medium, “A Case for Capitalism, In Regards to Space Travel”, [https://thepolicy.us/a-case-for-capitalism-in-regards-to-space-travel-d77e50f8116e //](https://thepolicy.us/a-case-for-capitalism-in-regards-to-space-travel-d77e50f8116e%20/) jmk]

In the news yesterday was an article about how Elon Musk plans to start sending men to Mars in the year 2024 — a mere eight years away. Although the project may be ambitious — ridiculous even — if anyone can pull it off it is Elon Musk and his company SpaceX. And regardless of whether he succeeds in his quest or whether he does not succeed, the point will remain: At least he had the courage to try. For years, we have been waiting for N.A.S.A. (or some other government-funded agency) to begin pulling up their breeches when it comes to the manned exploration of our solar system…but thus far they have not been able to get their act together. We have waited and waited, but as of yet nothing has come to pass but brief mention of such travels here and there…like a wind with neither haste nor purpose. As of now, N.A.S.A. does not plan on sending a manned mission to Mars until the 2030s — assuming, of course, they get the government funding they need to undertake such a massive project. Considering the recent cuts to deep space exploration, down nearly $300 million from 2016, I am not certain what the condition of the program will look like in another two years…much less the gap between now and the 2030s. Where, then — if the government and its agencies will not provide us with the money for exploration — will we turn to slake our thirst for cosmic space travel? SpaceX. Private corporations. Capitalism. Seeing this article in the news, reading day after day the story of budget cuts to N.A.S.A. in regards to deep-space exploration and other related programs, got me thinking about just how important it will be for private companies and corporations to undertake these projects…such as Elon Musk’s SpaceX, and countless others (read the full list here). The problem is that we have gotten it into our heads that Capitalism is the root cause of our economic woes in the United States, perhaps failing to understand that such policies are something like a double-edged sword: they could also **be our salvation.** This article provides a great list of the pro’s and con’s of Capitalism. I would recommend you take the short passing of time it requires to read it through-and-through before continuing. Now then. I have never been for for fully-unhindered Capitalism. I do not believe that the government should stay out of economic affairs entirely, for as provided in the article many of the con’s relate to improper regulation (monopolization) as opposed to something fundamentally wrong, but I do not believe that any government should be going about shoving their claws into every economic affair either. There must be a healthy balance, especially if Capitalism is to work as it is supposed to work. The same goes for any policy. The government should be there to bolster competition between businesses…not favor one or bail-out the other. The more regulation, the more interference or amendment, the less it works…but this mix of regulation and free market must fall in the “goldilocks zone” if the citizens of said society are to reap its full benefit. If not, like planets about a star, the society shall either burn or freeze. One of those benefits is highlighted by Elon Musk’s SpaceX: the intervention of privately-funded companies to do things that a traditional government agency cannot. Namely, the exploration and eventual colonization of Mars in a reasonable, step-by-step timeframe…unlike the “we will get to it eventually” mindset plaguing the bowels of the United States government. Were not the policies in place to foster the growth of private companies, our best chance at getting people out of Earth-orbit — the Bush-approved, now-cancelled, insanely-expensive Constellation program — would have gone the way of promises and well-wishes. It is my hope that Elon Musk and space entrepreneurs like him are not simply blowing steam, and that one day — perhaps even within my lifetime — I could be on my way to a space hotel on the Moon, flying aboard a space airliner with the name of a private company plastered across the side. Regardless, if we humans are to truly become a multi-planet species we must not hinder economic growth with narrow thoughts. We must not become confused that the “problems down here” and the “problem of getting out there” must be in conflict; they do not need to, and we must not suppose they should. They are two separate issues with two unique sets of problems, and thus this policy of taking resources from one to give to the other will only ensure that neither issue is given that which it needs, or enough to fix what must be solved. Therefore I propose that we support these pioneers of space travel in any way that we are able. Let us not forget that solving the issue of “how do we get there” might just lead to the end of our “problems down here”.

#### X/a impact from asteroids

#### A2 – space philantropy

#### That turns sustainability

Ashworth 10[Stephen Ashworth is a long-standing Fellow of the British Interplanetary Society. He works in academic publishing in the Voltaire Foundation, part of Oxford University – Towards the Sociology of the Universe, part 2 – “A Review of Dickens and Ormrod, Cosmic Society – 18 December 2010 – http://www.astronist.demon.co.uk/space-age/essays/Sociology2.html]

There are thus twoplausible end-points to our current phase of growth: collapse back to a pre-industrial level (the supernova burns out), or continued growthtaking us onto a sustainable level of technological maturity (the baby grows up). The difference between these two future courses is immense. In terms of population, the carrying capacity of Earth for human populations is greater than the current 6 or 7 billion, but not very much so, perhaps a few tens of billions (depending on the technologies available). Any retreat to medieval levels of technology would cut this figure by a factor of ten, probably down to less than a billion. But the carrying capacity of the Solar System is at least a million times greater than that of a high-tech Earth, and that of the Galaxy at least a billion times greater again than that of the Solar System. The present-day situation of human society is therefore that it finds itself at a cross-roads of unparalleled significance. If growth is not maintained, then, unless they can reignite that growth phase, our descendants are forever restricted to planet Earth. But must they necessarily fall back to a medieval or even more primitive level? Could industrial civilisation survive for a while in a zero-growth phase at around its present-day level of development, and if so, for how long? In any discussion of mankind and space, this is a key question which must be addressed. Certainly, pre-industrial civilisations have survived with little change over millennial timespans, but to what extent does industrial technology change this picture? And what about million-year timespans? The only types of industrial civilisation we have observed so far have been that based on capitalist economics, and that based on socialism, in which a political ideology takes over the role of capital. Capitalist societies would seem to be expansionary in their very nature: they are defined by the self-multiplying power of capital. But could a socialist society, one with a suitable ideology which was sufficiently severely imposed, preserve zero growth indefinitely?I think not, because societies evolve in an unpredictable manner. Governments which have tried to maintain control in, say, Tokugawa Japan (1603-1868) or Soviet Russia (1917-1989) have failed in their goals of stability (Japan) or planned growth (Russia), and modern liberal democracy works by limiting its ambitions and ceding much power to the economy at large. Even a global dictatorship, which unlike those two historical examples would by definition not face competition from abroad, would, I think, be unable to control all the disruptive political, technological and economic forces emerging unpredictably worldwide over centuries and millennia. The result would then be either the breakout of a new phase of growth, or decline and collapse. In view of the likelihood of long-term adverse climate change (whether triggered by industrial pollution, or asteroid impact, or an outbreak of super-vulcanism, or the return of ice-age conditions, or solar variations), and in addition the persistent threat of global high-tech conflict (whether spreading destruction by nuclear weapons, or computer viruses, or genetically engineered organisms, or microscopic or macroscopic robots), decline would be the more plausible outcome. Nevertheless, the question as to how long a global zero-growth industrial civilisation could survive in a stable state on one planet is an interesting one, though not one that is likely to attract unbiased analysis by modern sociology. What, however, if growth is maintained? Surely Earth will become overburdened and that growth will lead to environmental and social collapse? The point here is that, while the resources of Earth are limited, those of the Solar System are very much greater. Growth in population sizes and in the usage of energy and raw materials may therefore continue for a number of centuries into the future, provided that two conditions are met: \* Material growth on Earth levels off; \* Material growth in space and on other planets takes over the upward trend. Is this not equivalent to saying that Earth must settle down with a zero-growth society before space development begins? No, so long as the terrestrial and extraterrestrial economies are linked. While this remains true, it will be possible for investors on Earth to invest capital in extraterrestrial development, and receive dividends back from that development. While most Earth-dwelling people will remain on the mother planet, there will also be flows of people, goods and ideas between Earth and her colonies, which must also have a profound economic effect. A net inflow of value to Earth is in any case necessary in order that terrestrial investment in outer space does not merely produce inflation in the home economy. But that inflow need not be of material goods, and is more likely to consist of energy (solar power delivered on microwaves or lasers) and information (software and product development). But surely ultimately the limits of the Solar System will be reached, and the interplanetary civilisation have to settle down as a zero-growth society? Yes, granted. But this differs from a zero-growth planet Earth due to the immense size of the Solar System, which is larger than Earth by between four and six orders of magnitude, depending how far out one wants to go – to the distance of Mars, say, or to the Oort comet cloud far beyond Pluto.An interplanetary industrial civilisation is secure for the long term in a way that a monoplanetary one is not, because it is too large to form a unity, either politically or environmentally, and because it is forced to adapt to a wide range of hostile environmental conditions. It willtherefore be secure against any conceivable environmental or military disaster, because such a disaster can only affect a single planet, or at most a limited region of the system. Climate change or world war on Earth has no effect on Mars, and vice versa. And with the majority of the population in orbiting artificial space colonies, even a major change in solar luminosity could be tolerated (though such a change is not expected to have a noticeable effect for hundreds of millions of years yet). With interplanetary civilisation, the social system as a whole can tolerate decline and collapse in particular locations, because they can then be recolonised from outside. Once humanity achieves interstellar status, this security factor is clearly vastly enhanced.However, in order for interplanetary growth to occur in the first place, an economic mechanism must be in place to drive it. The most suitable economic mechanism that has been demonstrated so far is capitalism. Its need for continuous expansion makes it highly appropriate as an economic system for a society colonising its local planetary system.

#### Cap is key to tech innovations

Atkisson 2k (Alan, President and CEO of an international sustainability consultancy to business and government, “Sustainability is Dead – Long Live Sustainability”, http://www.academia.edu/6420556/Sustainability\_is\_Dead\_Long\_Live\_Sustainability)

Transformation of many kinds is already happening all around us, mostly in the name of globalization. “Globalization” has become the signifier for a family of transformations in communications, finance, trade, travel, ecological and cultural interaction that are drawing the world’s people and natural systems into ever closer relationship with each other, regardless of national boundaries.Many of these transformations contribute more to the likelihood of global collapse than to global sustainability, because they are fueled by destructive technologies, they result in ever greater levels of environmental damage, they undermine national democracies, and they have so far widened dramatically the gap between rich and poor.Yet there is nothing inherently unsustainable about globalization*per se*, if we understand that word to mean the growing integration of global human society.Indeed,globalization of many kinds—from the spread of better technologies to the universal adoption of human rights—is essential to attaining global sustainability.But the engines of globalization need to be harnessed to a more noble set of goals and aspirations. At the heart of most descriptions of globalization is the market economy. It has often been fashionable to blame the market for the environmental crisis, and in particular to blame the market’s tendency to concentrate power within the large, independent capital structures we call “corporations.” But we need corporations, and the market, to accomplish the change we seek. To develop and spread innovations for sustainability at transformation speed, we need corporate-scale concentrations of research, production, and distribution capacity. We need the market's speed, freedom, and incentive structures.Clearly, we also need governors on the spread of destructive development, and the enormous fleet of old and dangerous innovations—from the internal combustion engine to the idea that cynical nihilism is “cool”—that are increasing our distance from the dream of sustainability at an accelerating rate. But if we can alter globalization so that it turns the enormous power of the market and the corporation in a truly sustainable direction, we will watch in awe as our world changes for the better with unimaginable speed. Envisioning the transformation of globalization will strike many as the ultimate in wishful thinking. Yet transformation begins precisely in wish and thought; and there are currently two powerful wishes adding considerable weight to global efforts to bring down the Berlin Wall between today's damaging “capitalism-at-all-costs” and tomorrow’s practice of a more mindful “capitalism conscious of all costs.” One “wish” is the United Nations’ new “Global Compact” with the corporate sector. It calls on corporations to adopt greater levels of social and environmental responsibility—a call that many are pledging to heed. The other “wish” is the non-governmental Global Reporting Initiative, which sets new criteria for measuring sustainable corporate performance and is fast becoming adopted as the international standard, by corporations and activists alike. These promising developments, still in their relative infancy, did not appear suddenly out of nowhere. There are but the latest and most successful demonstration of the power of “wishful thinking,” indulged in by hundreds of thousands of people, from the Seattle protesters of 1999 to the world government theorists of the 1930s. And these agreements are, themselves, “wishful thinking” of a kind, comprised as they are of agreements on principle and criteria for measurements. But if this is what wishful thinking can do, consider what inspired action, multiplied throughout the global system, will accomplish when seriously embraced at the same scale. Indeed, the transformation of globalization will, in many ways, signal the onset of transformation in general. When we witness the redirection of investment flows, the adoption of new rules and ethics governing the production process, the true raising of global standards of environmental, social, and economic performance, sustainability will then be written directly into the cultural genes, also known as “memes,” steering global development.These new “sustainability memes” will then be replicated in every walk of industrial life. The dream of sustainability will become business as usual.

#### Innovation solves Extinction.

Matthews 18 Dylan Matthews 10-26-2018 “How to help people millions of years from now” <https://www.vox.com/future-perfect/2018/10/26/18023366/far-future-effective-altruism-existential-risk-doing-good> (Co-founder of Vox, citing Nick Beckstead @ Rutgers University)//Re-cut by Elmer

If you care about improving human lives, you should overwhelmingly care about those quadrillions of lives rather than the comparatively small number of people alive today. The 7.6 billion people now living, after all, amount to less than 0.003 percent of the population that will live in the future. It’s reasonable to suggest that those quadrillions of future people have, accordingly, hundreds of thousands of times more moral weight than those of us living here today do. That’s the basic argument behind Nick Beckstead’s 2013 Rutgers philosophy dissertation, “On the overwhelming importance of shaping the far future.” It’s a glorious mindfuck of a thesis, not least because Beckstead shows very convincingly that this is a conclusion any plausible moral view would reach. It’s not just something that weird utilitarians have to deal with. And Beckstead, to his considerable credit, walks the walk on this. He works at the Open Philanthropy Project on grants relating to the far future and runs a charitable fund for donors who want to prioritize the far future. And arguments from him and others have turned “long-termism” into a very vibrant, important strand of the effective altruism community. But what does prioritizing the far future even mean? The most literal thing it could mean is preventing human extinction, to ensure that the species persists as long as possible. For the long-term-focused effective altruists I know, that typically means identifying concrete threats to humanity’s continued existence — like unfriendly artificial intelligence, or a pandemic, or global warming/out of control geoengineering — and engaging in activities to prevent that specific eventuality. But in a set of slides he made in 2013, Beckstead makes a compelling case that while that’s certainly part of what caring about the far future entails, approaches that address specific threats to humanity (which he calls “targeted” approaches to the far future) have to complement “broad” approaches, where instead of trying to predict what’s going to kill us all, you just generally try to keep civilization running as best it can, so that it is, as a whole, well-equipped to deal with potential extinction events in the future, not just in 2030 or 2040 but in 3500 or 95000 or even 37 million. In other words, caring about the far future doesn’t mean just paying attention to low-probability risks of total annihilation; it also means acting on pressing needs now. For example: We’re going to be better prepared to prevent extinction from AI or a supervirus or global warming if society as a whole makes a lot of scientific progress. And a significant bottleneck there is that the vast majority of humanity doesn’t get high-enough-quality education to engage in scientific research, if they want to, which reduces the **odds that we have enough trained scientists to come up with the breakthroughs** we need as a civilization to survive and thrive. So maybe one of the best things we can do for the far future is to improve school systems — here and now — to harness the group economist Raj Chetty calls “lost Einsteins” (potential innovators who are thwarted by poverty and inequality in rich countries) and, more importantly, the hundreds of millions of kids in developing countries dealing with even worse education systems than those in depressed communities in the rich world. What if living ethically for the far future means living ethically now? Beckstead mentions some other broad, or very broad, ideas (these are all his descriptions): Help make computers faster so that people everywhere can work more efficiently Change intellectual property law so that technological innovation can happen more quickly Advocate for open borders so that people from poorly governed countries can move to better-governed countries and be more productive Meta-research: improve incentives and norms in academic work to better advance human knowledge Improve education Advocate for political party X to make future people have values more like political party X ”If you look at these areas (economic growth and technological progress, access to information, individual capability, social coordination, motives) a lot of everyday good works contribute,” Beckstead writes. “An implication of this is that a lot of everyday good works are good from a broad perspective, even though hardly anyone thinks explicitly in terms of far future standards.” Look at those examples again: It’s just a list of what normal altruistically motivated people, not effective altruism folks, generally do. Charities in the US love talking about the lost opportunities for innovation that poverty creates. Lots of smart people who want to make a difference become scientists, or try to work as teachers or on improving education policy, and lord knows there are plenty of people who become political party operatives out of a conviction that the moral consequences of the party’s platform are good. All of which is to say: Maybe effective altruists aren’t that special, or at least maybe we don’t have access to that many specific and weird conclusions about how best to help the world. If the far future is what matters, and generally trying to make the world work better is among the best ways to help the far future, then effective altruism just becomes plain ol’ do-goodery.