## 1

#### Ethics must begin a priori and the meta-ethic is bindingness.

#### [1] Uncertainty – our experiences are inaccessible to others which allows people to say they don’t experience the same, however a priori principles are universally applied to all agents.

#### [2] Bindingness – I can keep asking “why should I follow this” which results in skep since obligations are predicated on ignorantly accepting rules. Only reason solves since asking “why reason?” requires reason which is self-justified.

#### That means we must universally will maxims— any non-universalizable norm justifies someone’s ability to impede on your ends.

#### Thus, the standard is consistency with the categorical imperative.

#### Prefer –

#### [1] All other frameworks collapse—non-Kantian theories source obligations in extrinsically good objects, but that presupposes the goodness of the rational will.

#### [2] Consequences Fail: a] Every action has infinite stemming consequences, because every consequence can cause another consequence so we can’t predict. b] Induction is circular because it relies on the assumption that nature will hold uniform and we could only reach that conclusion through inductive reasoning based on observation of past events. c] Every action is infinitely divisible, only intents unify because we commit the end point of an action – but consequences cannot determine what step of action is moral d] Yes act/omission distinction – there are infinite events occurring over which you have no control, so you can never be moral Negate:

#### [1] A model of freedom mandates a market-oriented approach to space—that negates

Broker 20 [(Tyler, work has been published in the Gonzaga Law Review, the Albany Law Review and the University of Memphis Law Review.) “Space Law Can Only Be Libertarian Minded,” Above the Law, 1-14-20, <https://abovethelaw.com/2020/01/space-law-can-only-be-libertarian-minded/>] TDI

The impact on human daily life from a transition to the virtually unlimited resource reality of space cannot be overstated. However, when it comes to the law, a minimalist, dare I say libertarian, approach appears as the only applicable system. In the words of NASA, “2020 promises to be a big year for space exploration.” Yet, as Rand Simberg points out in Reason magazine, it is actually private American investment that is currently moving space exploration to “a pace unseen since the 1960s.” According to Simberg, due to this increase in private investment “We are now on the verge of getting affordable private access to orbit for large masses of payload and people.” The impact of that type of affordable travel into space might sound sensational to some, but in reality the benefits that space can offer are far greater than any benefit currently attributed to any major policy proposal being discussed at the national level. The sheer amount of resources available within our current reach/capabilities simply speaks for itself. However, although those new realities will, as Simberg says, “bring to the fore a lot of ideological issues that up to now were just theoretical,” I believe it will also eliminate many economic and legal distinctions we currently utilize today. For example, the sheer number of resources we can already obtain in space means that in the rapidly near future, the distinction between a nonpublic good or a public good will be rendered meaningless. In other words, because the resources available within our solar system exist in such quantities, all goods will become nonrivalrous in their consumption and nonexcludable in their distribution. This would mean government engagement in the public provision of a nonpublic good, even at the trivial level, or what Kevin Williamson defines as socialism, is rendered meaningless or impossible. In fact, in space, I fail to see how any government could even try to legally compel collectivism in the way Simberg fears. Similar to many economic distinctions, however, it appears that many laws, both the good and the bad, will also be rendered meaningless as soon as we begin to utilize the resources within our solar system. For example, if every human being is given access to the resources that allows them to replicate anything anyone else has, or replace anything “taken” from them instantly, what would be the point of theft laws? If you had virtually infinite space in which you can build what we would now call luxurious livable quarters, all without exploiting human labor or fragile Earth ecosystems when you do it, what sense would most property, employment, or commercial law make? Again, this is not a pipe dream, no matter how much our population grows for the next several millennia, the amount of resources within our solar system can sustain such an existence for every human being. Rather than panicking about the future, we should try embracing it, or at least meaningfully preparing for it. Currently, the Outer Space Treaty, or as some call it “the Magna Carta of Space,” is silent on the issue of whether private individuals or corporate entities can own territory in space. Regardless of whether governments allow it, however, private citizens are currently obtaining the ability to travel there, and if human history is any indicator, private homesteading will follow, flag or no flag. We Americans know this is how a Wild West starts, where most regulation becomes the impractical pipe dream. But again, this would be a Wild West where the exploitation of human labor and fragile Earth ecosystem makes no economic sense, where every single human can be granted access to resources that even the wealthiest among us now would envy, and where innovation and imagination become the only things we would recognize as currency. Only a libertarian-type system, that guarantees basic individual rights to life, liberty, and the pursuit of happiness could be valued and therefore human fidelity to a set of laws made possible, in such an existence.

#### [2] Banning private space appropriation inhibits the sale and use of spacecraft and fuel- that’s a form of restricting the free economic choices of individuals

**Richman 12**, Sheldon. “The free market doesn’t need government regulation.” Reason, August 5, 2012. // AHS RG

Order grows from market forces. But where do **market forces** come from? They **are the result of human action. Individuals select ends and act to achieve them by adopting suitable means.** Since means are scarce and ends are abundant, **individuals economize in order to accomplish more rather than less.** And they always seek to exchange lower values for higher values (as they see them) and never the other way around. In a world of scarcity, tradeoffs are unavoidable, so one aims to trade up rather than down. (One’s trading partner does the same.) **The result of this**, along with other **features of human action**, and the world at large **is what we call market forces. But really, it is just men and women acting rationally in the world.**

## 2

#### Interp: The affirmative must define “outer space” in a delimited text in the 1AC.

#### “Outer Space” is flexible and has too many interps – normal means shows no consensus

Leepuengtham 17 [Tosaporn Leepuengtham (Research Judge, Intellectual Property and International Trade Division, Supreme Court of Thailand). "International space law and its implications for outer space activities." 01-27-2017, Accessed 12-9-2021. https://www.elgaronline.com/view/9781785369612/06\_chapter1.xhtml //

Those states which favor the precise demarcation of outer space support the spatial approach, whereas those who oppose to such demarcation prefer the functional approach, as the latter allows more flexibility in terms of the development of space technology.34 This lack of a definition and delimitation of outer space is problematic, since certain particular areas are neither explicitly defined as ‘air space’ or ‘outer space’. For example, it is vague whether an area located between 80 km and 120 km above sea level would be classified as either air space or outer space in the absence of demarcation, since 80 km is the maximum attitude for convention aircraft, and 120 km is the lowest attitude in which space activities could be carried out.35 Satellites which are stationed in a geostationary orbit are a good example of this ambiguity. Owing to this lack of any internationally recognized delimitation, equatorial states claim sovereignty over that part of the geostationary orbit which is located over their respective territories;36 whereas technologically developed countries believe that the geostationary orbit is an integral part of outer space.37 This uncertain status of areas leads to legal jurisdictional problems. According to international law, a state has sovereignty over the airspace above its territory.38 However, national sovereignty does not extend into outer space.39 Thus, it is necessary to determine where a state’s airspace ends to ensure that the appropriate legal regime is applied. One possible scenario which might occur and which is relevant to the subject of this book is the creation or infringement of an intellectual work is in just such an ambiguous location. This would cast doubt on the ‘legal’ location of creation or infringement, and the question of which applicable legal regime arises. Should we apply the law of the underlying state or is there no law to apply? For example, would satellite signals transmitted from a satellite stationed in a geostationary orbit located over equatorial countries be considered as works created or, if intercepted, be infringed, in outer space or in the sovereign air space of those respective countries? These hypothetical examples highlight why a boundary is necessary if unpredictability arising from different legal application is to be avoided. While it might be argued that this issue is being overemphasized at this stage, given increasing use of space technology, this problem is worth considering now rather than later.

#### Violation – you don’t.

#### Prefer –

#### 1] Stable Advocacy – they can redefine in the 1AR to wriggle out of DA’s which kills high-quality engagement and becomes two ships passing in the night –We lose access to Tech Race DA’s, Asteroid DA’s, basic case turns, and core process counter plans that have different definitions and 1NC pre-round prep.CX can’t resolve this and is bad because A] Not flowed B] Skews 6 min of prep C] They can lie and no way to check D] Debaters can be shady.

#### 2] Real World – Policy makers will always define the entity that they are recognizing. It also means zero solvency, absent spec, private entities can circumvent since there is no delineated way to enforce the aff and means their solvency can’t actualize. This spec shell isn’t regressive- it literally determines what the affirmative implements and who it affects

#### D. Voter

**Fairness is a** voter—debate is a competitive activity that requires objective evaluation. Education is a voter – it is the terminal impact of debate. Drop the debater—the abuse has already occurred and my time allocation has shifted—also the shell indicts your whole aff—justifies severance which skews my strat. Use competing interps—leads to a race to the top since we figure out the best possible norm and avoids judge intervention since there’s a clear briteline. No RVIs—a) illogical – you shouldn’t win for being fair – it’s a litmus test for engaging in substance b) norming – I can’t concede the counterinterp if I realize I’m wrong which forces me to argue for bad norms

## 3

#### Text – we endorse the entirety of the 1ac except appropriation of outer space through Space Elevators being Unjust.

#### Space Elevators constitute Appropriation – they impede orbits.

Matignon 19 Louis de Gouyon Matignon 3-3-2019 "LEGAL ASPECTS OF THE SPACE ELEVATOR TRANSPORTATION SYSTEM" <https://www.spacelegalissues.com/space-law-legal-aspects-of-the-space-elevator-transportation-system/> [PhD in space law (co-supervised by both Philippe Delebecque, from Université Paris 1 Panthéon-Sorbonne, France, and Christopher D. Johnson, from Georgetown University || regularly write articles on the website Space Legal Issues so as to popularise space law and public international law]//Elmer

An Earth-based space elevator would consist of a cable with one end attached to the surface near the equator and the other end in space beyond geostationary orbit. An orbit is the curved path through which objects in space move around a planet or a star. The 1967 Treaty’s regime and customary law enshrine the principle of non-appropriation and freedom of access to orbital positions. Space Law and International Telecommunication Laws combined to protect this use against any interference. The majority of space-launched objects are satellites that are launched in Earth’s orbit (a very small part of space objects – scientific objects for space exploration – are launched into outer space beyond terrestrial orbits). It is important to precise that an orbit does not exist: satellites describe orbits by obeying the general laws of universal attraction. Depending on the launching techniques and parameters, the orbital trajectory of a satellite may vary. Sun-synchronous satellites fly over a given location constantly at the same time in local civil time: they are used for remote sensing, meteorology or the study of the atmosphere. Geostationary satellites are placed in a very high orbit; they give an impression of immobility because they remain permanently at the same vertical point of a terrestrial point (they are mainly used for telecommunications and television broadcasting). A geocentric orbit or Earth orbit involves any object orbiting Planet Earth, such as the Moon or artificial satellites. Geocentric (having the Earth as its centre) orbits are organised as follow: 1) Low Earth orbit (LEO): geocentric orbits with altitudes (the height of an object above the average surface of the Earth’s oceans) from 100 to 2 000 kilometres. Satellites in LEO have a small momentary field of view, only able to observe and communicate with a fraction of the Earth at a time, meaning a network or constellation of satellites is required in order to provide continuous coverage. Satellites in lower regions of LEO also suffer from fast orbital decay (in orbital mechanics, decay is a gradual decrease of the distance between two orbiting bodies at their closest approach, the periapsis, over many orbital periods), requiring either periodic reboosting to maintain a stable orbit, or launching replacement satellites when old ones re-enter. 2) Medium Earth orbit (MEO), also known as an intermediate circular orbit: geocentric orbits ranging in altitude from 2 000 kilometres to just below geosynchronous orbit at 35 786 kilometres. The most common use for satellites in this region is for navigation, communication, and geodetic/space environment science. The most common altitude is approximately 20 000 kilometres which yields an orbital period of twelve hours. 3) Geosynchronous orbit (GSO) and geostationary orbit (GEO) are orbits around Earth at an altitude of 35 786 kilometres matching Earth’s sidereal rotation period. All geosynchronous and geostationary orbits have a semi-major axis of 42 164 kilometres. A geostationary orbit stays exactly above the equator, whereas a geosynchronous orbit may swing north and south to cover more of the Earth’s surface. Communications satellites and weather satellites are often placed in geostationary orbits, so that the satellite antennae (located on Earth) that communicate with them do not have to rotate to track them, but can be pointed permanently at the position in the sky where the satellites are located. 4) High Earth orbit: geocentric orbits above the altitude of 35 786 kilometres. The competing forces of gravity, which is stronger at the lower end, and the outward/upward centrifugal force, which is stronger at the upper end, would result in the cable being held up, under tension, and stationary over a single position on Earth. With the tether deployed, climbers could repeatedly climb the tether to space by mechanical means, releasing their cargo to orbit. Climbers could also descend the tether to return cargo to the surface from orbit.

#### Private Companies are pursuing Space Elevators.

Alfano 15 Andrea Alfano 8-18-2015 “All Of These Companies Are Working On A Space Elevator” <https://www.techtimes.com/articles/77612/20150818/companies-working-space-elevator.htm> (Writer at the Tech Times)//Elmer

Space elevators are solid proof that any mundane object sounds way cooler if you stick the word "space" in front of it. But there's much more than coolness at stake when building a space elevator – this technology has the potential to revolutionize space transportation, and the Canadian private space company Thoth Technology that was recently awarded a patent for its space elevator design isn't the only company in the game. One of the other major players is a U.S.-based company called LiftPort Group, founded by space entrepreneur Michael Laine in 2003. Its plan for a space elevator is vastly different from the one for which Thoth received a patent, however. Whereas Thoth's plans entail tethering a 12-mile-high inflatable space elevator to the Earth, LiftPort is shooting for the moon. Originally, LiftPort had planned to build an Earth elevator, too, but it abandoned the idea in 2007 in favor of building a lunar elevator. The basic design for a lunar elevator is an anchor in the moon that is attached to a cable that extends to a space station situated at a very special point. Known as a Lagrange Point, this is the gravitational tipping point between the Earth and the moon, where their gravitational pulls essentially cancel one another out. A robot could then travel up and down the tether, ferrying cargo between the moon and the station. Out farther in space, a counterweight would balance out the system. Both types of space elevator are intended to increase space access, but in very different ways. Thoth's Earth elevator aims to make launches easier by starting off 12 miles above the Earth's surface. LiftPort's space elevator aims to increase access to the moon in particular, because it is much easier to launch a rocket to the Lagrange Point and dock it at a space station than it is to get to the moon directly. There's a third major company based in Japan called Obayashi Corp. whose plans look like a hybrid of Thoth's and LiftPort's. Obayashi is not a space company, however – it's actually a construction company. Like Thoth, Obayashi plans to build an Earth elevator. But its Earth elevator would consist of a cable tethered to the blue planet, a robotic cargo-carrier, a space station, and a counterweight. It essentially looks like LiftPort's plans, but stuck to the Earth instead of to the moon.

#### Yes Space Elevators – NASA confirms.

Snowden 18 Scott Snowden 10-2-2018 "A colossal elevator to space could be going up sooner than you ever imagined" <https://www.nbcnews.com/mach/science/colossal-elevator-space-could-be-going-sooner-you-ever-imagined-ncna915421> (Scott has written about science and technology for 20 years for publications around the world. He covers environmental technology for Forbes.)//Elmer

For more than half a century, rockets have been the only way to go to space. But in the not-too-distant future, we may have another option for sending up people and payloads: a colossal elevator extending from Earth’s surface up to an altitude of 22,000 miles, where geosynchronous satellites orbit. NASA says the basic concept of a space elevator is sound, and researchers around the world are optimistic that one can be built. The Obayashi Corp., a global construction firm based in Tokyo, has said it will build one by 2050, and China wants to build one as soon as 2045. Now an experiment to be conducted soon aboard the International Space Station will help determine the real-world feasibility of a space elevator. “The space elevator is the Holy Grail of space exploration,” says Michio Kaku, a professor of physics at City College of New York and a noted futurist. “Imagine pushing the ‘up’ button of an elevator and taking a ride into the heavens. It could open up space to the average person.”

#### Regardless of completion, Elevators spur investment in Nanotechnology

Liam O’Brien 16. University of Wollongong. 07/2016. “Nanotechnology in Space.” Young Scientists Journal; Canterbury, no. 19, p. 22.

Nanotechnology is at the forefront of scientific development, continuing to astound and innovate. Likewise, the space industry is rapidly increasing in sophistication and competition, with companies such as SpaceX, Blue Origin and Virgin Galactic becoming increasingly prevalent in what could become a new commercial space race. The various space programs over the past 60 years have led to a multitude of beneficial impacts for everyday society. Nanotechnology, through research and development in space has the potential to do the same. Potential applications of nanotechnology in space are numerous, many of them have the potential to capture and inspire generations to come. One of these applications is the space elevator. By using carbon nanotubes, a super light yet strong material, this concept would be an actual physical structure from the surface of the Earth to an altitude of approximately 36 000 km. The tallest building in the world would fit into this elevator over 42 000 times. The counterweight, used to keep the elevator taught, is proposed to be an asteroid. This would need to be at a distance of 100 000 km, a quarter of the distance to the moon. The benefits of such a structure would be enormous. 95% of a space shuttle's weight at take-off is fuel, costing US$ 20 000 per kilogram to send something into space. However, with a space elevator the cost per kilogram can be reduced to as little as US$ 200. Exploration to other planets can begin at the tower, and travel to and from the moon could become as simple as a morning commute to work. Solar sails provide the means to travel large distances and incredible speeds. Much like sails on a boat use wind, the solar sail uses light as a source of propulsion. Ideally these sails would be kilometres in length and only a few micrometres in thickness. This provides us with the ability to travel at speeds previously unheard of. Using carbon nanotubes once again, a solar sail has the capability to travel at 39 756 km/s which is 13% of the speed of light! This sail could reach Pluto in an astonishing 1.7 days, and Alpha Centauri in just 32 years. Space travel to other planets, other stars, could be possible with solar sails. The Planetary Society is funding for a space sail of itself, and has successfully launched one into orbit. NASA has also sent a sail into orbit, allowing it to burn up in the atmosphere after 240 days. Investing time and resources into nanotechnology for space exploration has benefits for society today. Materials such as graphene are being used in modern manufacturing at an increasing rate as the applications become utilised. Carbon nanotubes will change the way we think about materials and their strength. These nanotubes have a tensile strength one hundred times that of steel, yet are only a sixth of the weight. Imagine light weight vehicles using less petrol and energy as well as being just as strong as regular vehicles. With potentials to revolutionize the way we think about space travel, nanotechnology has a bright future. As a new field of science, it has the capability to push the human race to the outer reaches of our galaxy and hopefully one day to other stars. It will inspire generations of explorers and dreamers to challenge themselves and advance the human race into the next era. As Richard Feynman said in his 1959 talk 'There's Plenty of Room at the Bottom' "A field in which little has been done, but in which an enormous amount can be done. There is still plenty more to achieve.

#### Nanotech solves every existential threat

**Miller 17,** Gina Miller, She has written articles and provided interviews on the subject of nanotechnology and created digital artwork, videos and animations to illustrate future applications. Her work has been featured in various media including the History Channel, Japanese television, international documentaries, Wired, PC Magazine, Fast Company, and various books such as “Nanofuture” by J. Storrs Hall, the inventor of the “utility fog” concept. Miller has collaborated with other nanotechnology pioneers such as Robert A. Freitas Jr., author of “Nanomedicine,” and is a frequent collaborator of the Foresight Institute co-founded by K. Eric Drexler the “founding father of nanotechnology”.. 2-26-2017, accessed on 1-28-2021, Nanotechnology Industries, "Nanotechnology, the real science of miracles, the end of disease, aging, poverty and pollution - Nanotechnology Industries", http://nanoindustries.com/nanotechnology\_science\_of\_miracles/ //Adam

The current status of disease and death is staggering. We do know that in the documented world 56 million people die every year. Dissecting the statistics of disease provided by the World Health Organization is overwhelming to weed through. There is a solution. Or there may be in the future. One day there could be a cure for all disease, and you may be able to live forever, in a healthy youthful state. One day it may be possible that scientists will be able to create nanorobots using nanotechnology. Nanotechnology is the ability to see and move atoms around. Everything is made of atoms, the chair you are sitting in, your food, your body, the air we breathe, everything. Atoms are so small they cannot be seen by the human eye. Atoms are on the nanoscale, that's a teeny, tiny size. There are 25,400,000 nanometers in an inch, a sheet of newspaper is 100,000 nanometers thick, human hair is about 80,000 nanometers in diameter. Atoms are the building blocks. Different atoms, arranged in different ways, make molecules that make the different things you see and experience. In the human body atoms come together to make many things, for example water, fats, hair, bones, and DNA. DNA and other molecules build cells; sometimes cells malfunction and cause disease. Where does nanotechnology fit in? That's a self realizing question, that's how, it fits in! Think of it this way, if you were King Kong, could you grab one grain of sand easily? Your hands would be too big. That's how medicine is currently treating disease. Nanotechnology is on the same size and scale as disease. A nanorobot can grab a cell and repair it. This will allow us to cure diseases that have never been cured before. Nanorobots could be released into the blood stream via pill or injection to find and repair damage and then break down and disintegrate. Or nanorobots could remain in the body at all times, perpetually monitoring, identifying and repairing problems immediately, without any external treatment. Nanorobots would cure the aliment so early on that you would never even know you were going to get sick. Chemotherapy releases toxic chemicals throughout the entire body rather than just the affected area, such as a tumor. This process destroys the cancer but also the immune system. Chemotherapy makes patients very sick, and there is risk of permanent damage or death from the treatment itself. There is also a risk of the cancer returning. A nanorobot could have radiation inside of it, locate the tumor, inject it and destroy it directly. Molecular nanorobots wouldn't leave one cancerous cell behind. That's one of the benefits of getting down to the molecular level. Doctors cannot see on the molecular level and could easily miss some cancer cells, which is often the case and the cancer returns. A nanotech gene therapy has successfully killed ovarian cancer in mice; if successful in human clinical trials it could save the lives of 15000 women a year. But it doesn't stop with cancer. Every disease is made out of the same atoms that everything else is. All medical conditions are a result of atoms being out of place; a nanorobot could put them back where they belong, thus immediately alleviating the problem without the side effects that current day medication and treatments cause. What else can be repaired in the human body? EVERYTHING. From cancer to the common cold. There is nothing that nanotechnology could not repair. The injuries or illnesses you have right now will have the capability to be repaired or cured by nanotechnology. Nanotechnology could eliminate diseases, disabilities, and illnesses such as diabetes, malaria, HIV, cardiovascular disease, damage from injuries and accidents, heal wounds, reduce child mortality, regenerate limbs and organs, eliminate inflammatory/infectious diseases, and so on and so forth. Nanotechnology offers hope to people suffering from Alzheimer’s, Parkinson's, brain injuries, tumors and neurological disorders. Nanoconstructs could deliver neuroprotective molecules directly to the brain to recover or protect nerve cells from damage or degeneration. Nanotechnology has been emerging in this field in the form of nanoengineered scaffolds that could one day result in a tool for rewiring the intricate neuronal network. Research by Dr. Samuel I. Stupp designed molecules using nanomaterials and injected them into mice who were paralyzed due to spinal cord injury. After 6 weeks the mice regained the ability to walk. Research like this could one day evolve into real cures for people. 65 billion dollars is wasted every year due to low bioavailability. Meaning that the drug or treatment used is not absorbed into or accessed by the body properly due to a multitude of reasons. For example drug interactions, different molecular arrangements and manufacturing processes by different brands. Drugs with more moisture may form lumps in the stomach which decreases absorption, and a highly compressed pill will slow absorption. Different level changes in the body at any given time may cause drug toxicity. Metabolism, age, activity, stress, previous surgery and syndromes are also factors. These are huge challenges that can be alleviated by using nanotechnology to target the specific areas. Nanorobots can take their cues from mother nature; she is the first nanotechnologist. She is an expert at creating molecular machines. Geneticists have been taking advantage of viruses for use in gene therapy for some time. They modify a virus by removing the viral gene so it doesn't cause disease. They replace it with healthy genes to transport to the faulty cell and cure diseases. This strategy of hacking viruses could be exploited by nanotech. Viruses are biological molecular machines that could be modified into becoming nanorobots or they could become transportation for a nanorobot. Another means is a nanorobot could attach itself to a traveling white blood cell and ride shotgun to assist in the tissue repair of injured tissue. Nanotechnology could even be involved in tissue engineering, creating scaffolds for artificial organs and implants. Tissue from your own body could be used to make new tissue, which assures that your body doesn't reject it. The surgeries of today are painful, costly, can leave scars and can even be life threatening. Repairing nanorobots would eliminate the need for surgeries, incisions, side effects and recovery time. According to the American Academy of Periodontology there are links to poor dental health and stroke, heart disease, respiratory disease, osteoporosis, some cancers and diabetes. Nanorobots as nanodentistry could repair damage without large needles or drills. Nanorobots could also constantly and invisibly maintain and clean your teeth to avoid any dental problems. Hygiene is important for good health; your skin and hair could be cleaned by nanorobots eliminating the need for showers. Spider bites and ticks carrying lyme disease would be detected by nanorobots, blocking penetration. Other skin problems such as eczema would be repaired by dermal nanorobots. Is aging a disease? Could aging be cured? Yes. Since nanorobots would be able to repair single cells on the molecular level they would be able to repair damages created by aging. It's all the same to a nanorobot. Nanotechnology could repair damaged cells. Dead cells are the primary reason for aging and death; nanorobots could replace senescent (old) cells with non-senescent cells, or reprogram cells so they do not senescensce, which would keep the body from aging. Not only would the inside of your body never get sick or age, but neither will the outside. Your skin will be young, elastic, dewy and wrinkle-free. Your hair will be thick, without gray, and intact. Your hearing, your eyesight and memory will be in perfect shape. You wouldn't get arthritis, turkey neck, or saggy parts. You could go out dancing when you are 93 and not worry about sore feet, low energy or suffering any consequences. Unless you party too hard, but that's on you, not the nano. So if you never get sick and never get old could you live forever? Yes. nanorobots could be programmed to rebuild older cells into younger copies on a regular basis thereby the human body could become immortal. You could live a disease-free youthful life, forever. Of course immortality isn't for everyone and everyone should have the right to decide what they want or don't want for their own body. Death will be a choice rather than a requirement. There are well funded countries that have access to researchers and high tech equipment that would love to figure out how to create the nanotechnology that will repair bodies and end disease. In the US despite having a lot of financial resources it's not always easy to get funding. If you are at a university, you need to write a grant, go through a lot of red tape, and there are a lot more near-term projects that seem to get prioritized when it comes to funding. For companies looking for investors, unfortunately not all investors can foresee the amazing future that nano will have because they are used to funding things they can see. For example a company that makes desks seeking an investor can show the investor the money they need for each piece of wood, bolt, and the quantity of desks that will be manufactured within a specific time frame. Nanotechnology is in development and isn't readily available like a piece of wood, the piece of wood has to be built. And the individual processes of each emerging development will have their own variables. Once the recipe has been figured out and formulated, the investment we have made will then be very inexpensive and easy to reproduce. Third world countries would have easy access to nanomedicine. Mother nature puts atoms together all the time and it doesn't cost her anything. The raw materials for making nanorobots would be essentially cost-free because they will be made mostly of carbon. Because nanotechnology would be created on the very small atomic level, traveling to provide treatment would not require large equipment. The size and portability would make treatment easily accessible across the world. The environment and living conditions also impact health. Since nanotechnology is on the atomic level and atoms are everywhere, it can be beneficial to the world all around us, as well as our bodies. Nanotechnology could enrich depleted soil in places like Africa, which is currently facing a food crisis. Vitamins, nutrients and minerals could be delivered to rebuild soil to a fertile state and thus have the ability to grow food. Hunger could one day be a solvable problem. Nanotechnology would make it possible to provide meat and animal products inexpensively without killing animals. E.coli and other pathogens could be detected in soil and eliminated so that food is not harmful. Currently nanomaterials are in development to release fertilizers for plants and nutrients for livestock, nano sensors for monitoring the health of crops and farm animals, and magnetic nanoparticles to remove soil contaminants. According to water.org 750 million people around the world lack access to safe water; approximately one in nine people. 840,000 people die each year from water-related disease. A portable non-chemical nano-filtration water purification device has been developed by Micheal Pritchard. It creates safe and sterile water out of dirty water and would make the cost of water per household an estimated 3 dollars a year. His company has provided clean water to countries who have gone through natural disasters, such as Haiti and the Philippines. In the future nanotechnology particles could destroy bacteria that often cause fatal disease. Pollution in general, global warming, nuclear waste, oil spills, smog, and acid rain, could be remedied and prevented by nanotechnological advances. Large quantities of nanorobots could come together to remove pollutant atoms from the atmosphere, earth and water. These groups of nanorobots could swim in contaminated waters and be released into the polluted atmosphere to destroy or remove contaminating molecules. Nanorobots could pull apart the bad molecules and reassemble the atoms into good molecules for other positive purposes. As a first indicator of the possibility, Brian Mercer created a new pollution control technology using nanofibres that greatly reduce industrial pollution by trapping and removing the pollutants. Currently nanotech is being used to reduce emissions from car fuels. Since nanotechnology builds atom by atom; the process is pollution free. Nanotechnology will not be manufactured in the way we use manufacturing plants today. There will be no chemical by product, no emission, hazardous waste and no pollution.

#### And under consequentialism Extinction first

#### Impact calc –

#### Extinction outweighs:

#### A] Structural violence- death causes suffering because people can’t get access to resources and basic necessities

#### B] Objectivity- body count is the most objective way to calculate impacts because comparing suffering is unethical

#### C] Comes before value-to-life.

Tännsjö 11 (Torbjörn, the Kristian Claëson Professor of Practical Philosophy at Stockholm University, “Shalt Thou Sometimes Murder? On the Ethics of Killing,” <http://people.su.se/~jolso/HS-texter/shaltthou.pdf>) //BS 1-27-2018

\*\*Bracketed to avoid triggers

I suppose it is correct to say that, if Schopenhauer is right, if life is never worth living, then according to utilitarianism we should all [die] commit suicide and put an end to humanity. But this does not mean that, each of us should commit suicide. I commented on this in chapter two when I presented the idea that utilitarianism should be applied, not only to individual actions, but to collective actions as well.¶ It is a well-known fact that people rarely commit suicide. Some even claim that no one who is mentally sound commits suicide. Could that be taken as evidence for the claim that people live lives worth living? That would be rash. Many people are not utilitarians. They may avoid suicide because they believe that it is morally wrong to kill oneself. It is also a possibility that, even if people lead lives not worth living, they believe they do. And even if some may believe that their lives, up to now, have not been worth living, their future lives will be better

## Case

#### Economic data restricts biases, promotes critical thinking, and prevents flawed decision-making errors---rejecting economists plagues public discourse with innumeracy that results in worse outcomes.

Ip 17, \*Greg Ip is a Canadian-American journalist, currently the chief economics commentator for The Wall Street Journal. A native of Canada, Ip received a bachelor's degree in economics and journalism from Carleton University in Ottawa, Ontario; (August 25th, 2017, “In Defense of the Dismal Science”, https://www.wsj.com/articles/in-defense-of-the-dismal-science-1503679118) Recut Jet

But such misjudgments don’t justify the charges leveled at economists. Take, for example, their inability to predict financial meltdowns. Crises almost by definition are unpredictable. In a recent essay, Ricardo Reis, an economist at the London School of Economics, argues that failing to foretell a financial crash is no more an indictment of economics than failing to predict when a patient will die is an indictment of medicine. Economists didn’t predict the financial crisis, Prof. Reis notes, but they did help to arrest it by applying theory and experience: “The economy did not die, and a Great Depression was avoided, in no small part due to the advances of economics over many decades.” Another caricature of economists is that they try to emulate physicists, fetishizing elegant, abstract mathematical models disconnected from economic reality. Paul Romer, the chief economist at the World Bank, derisively calls this approach “mathiness.” The critique is certainly fair in some corners of academia, but it is increasingly untrue of the profession as a whole. In 1963, roughly half the papers published in the top three American economics journals were theoretical, according to a tally by Daniel Hamermesh, now at Royal Holloway, University of London. By 2011, that figure had shrunk to 28%; the remainder were empirical papers based on public data, on data gathered by the authors or on experiments. Economic debates these days are won not by the best theory but by the best data: Statistics are more important than calculus. Economists are far more obsessed with measurement than with math. When public discourse is plagued by innumeracy, this capacity to count is no small thing. Economists are also instinctively skeptical of simple explanations. They are trained to look for equilibrium, which is another way of saying, “When you change one thing, how do other things respond? Where do things settle once all interactions have occurred?” Advocates for a higher minimum wage extol the benefits to workers. Economists ask: Will it change employers’ demand for workers who earn the minimum wage? Or what they pay workers who earn just above the minimum? Or the prices they charge, or how much market share they lose to companies that don’t face the higher minimum or how much they invest in automation? Does it reduce turnover and thus make workers more productive? Advocates of tariffs on imported steel focus on the benefit to domestic steelmakers and their workers. But economists ask: What happens to steel-consuming companies that now face higher prices, as well as to their workers and customers? Does penalizing imports boost the dollar and hurt U.S. exports? The more data economists collect, the better they can map such complex interactions. Seemingly simple questions seldom have simple answers. A higher minimum wage helps workers in some circumstances but hurts them in others. Tariffs help some workers but hurt many others. Global warming will do some economic harm, but not enough to justify banning fossil fuels. Sometimes, this attachment to numbers conveys a false precision. Critics say that the Congressional Budget Office overestimated how many people would get insurance under Obamacare and must therefore be overestimating how many will lose it if the law were to be replaced. But the CBO always warned that its estimates were highly uncertain; what no economists doubted, including those working in Mr. Trump’s administration, is that the number would be large. Economists could confidently predict that price controls would lead to shortages in Venezuela, though not how severe they would be. Non-economists see all this as hopeless equivocation, but it is actually the way that evidence drives science. Economists still have their ideological leanings, but data has helped to restrict these biases. Surveys of top academic economists by the University of Chicago show considerable agreement, even among liberals and conservatives. For example, the scholars almost all agree that fiscal stimulus reduced unemployment after the last recession and that trade with China benefits Americans by providing them with cheap goods. A study by Gordon Dahl and Roger Gordon of the University of California, San Diego, found that disagreement among economists was greatest where the empirical research was most sparse, as with the issue of whether natural-gas fracking helps U.S. exports. Though economics remains an imperfect science, it has come a long way in 200 years. Its greatest challenge today isn’t the quality of the analysis it supplies, but whether there is still sufficient demand for it.

#### No alternative to growth for emissions – EKC is true for developed countries – their datasets include countries that haven’t reached the tipping point.

Acaravci and Akalin 17 [Ali Acaravci & Guray Akalin 17. 1 Faculty of Economics and Administrative Sciences, Mustafa Kemal University. 2017. “Environment–economic Growth Nexus: A Comparative Analysis of Developed and Developing Countries.” International Journal of Energy Economics and Policy, vol. 7, no. 5, pp. 34–43.] Recut Jet

6. CONCLUSIONS AND POLICY IMPLICATIONS Since the early 1970s, especially after the United Nations Conference on the Human Environment in 1972, the relationship between production and environmental concerns has been handled by different methods in different disciplines. This is because the environment is of vital importance for human life, and they are confronted with serious environmental problems. The most important of these problems are as follows: The risk of going over the environmental pollution assimilation capacity; the difficulty in return of natural balance in the environment; large-scale health problems caused by environmental pollution; rapid depletion of natural resources; global warming and climate change, and the resulting related natural disasters such as floods; the reduction of biodiversity, air pollution, and soil pollution. Empirical studies on the environmental pollution–economic growth nexus explore the validity of the EKC hypothesis which states that environmental pollution will increase up to a certain threshold of income growth, and after this threshold, will begin to decrease due to the demand for a clean environment and structural and technological inputs. If the EKC hypothesis is valid, economic growth is both cause of and solution to environmental pollution. This approach is often used when arguing that countries should not compromise economic growth policies to reduce environmental effects. The EKC hypothesis is not valid in cases where economic growth that increased production is the only cause of environmental pollution. This has accelerated the search to replace the neoclassical growth strategy. Especially highlighted by the 1992 UNCED conference in Rio de Janeiro, a win-win approach to understanding the appropriate account of the ecological paradigm has gained importance in recent years. Therefore, the validity of the EKC hypothesis is an important issue in formulating economic growth policies for all countries. In this study, the following two samples are used: (i) 40 highincome countries (OECD members and non-members) and (ii) 33 upper middle-income countries. These countries are selected according to data available from related income groups. The results from the dynamic panel data methods are as follows: (i) The Durbin–Hausman cointegration test shows that there is a long-term relationship between variables. (ii) The results from the CCE estimator indicate that there is evidence of validity of the EKC hypothesis in developed countries. (iii) The EKC hypothesis is not valid in the developing countries. These results show that economic growth is sufficient enough to safeguard environmental quality for developed countries. However, developing countries have not yet reached income levels high enough to be able to derive their turning points. Therefore, to reduce environmental pollution that comes with economic growth, developing countries should give importance to R&D activities and institutionalization of environmental awareness. An increase in environmental awareness is imperative and developing and developed countries must not forget the fact that the natural world of tomorrow will be created today. Also, our findings show that trade liberalization is not harmful for the environment in developed and developing countries. This means that the increase of trade volume will not produce more carbon emissions. Despite the results obtained for the developed countries, we cannot assume that environmental betterment will continue to accompany further growth of per capita income in developed countries. So that, future studies can examine the relationship between economic growth and other pollutants. Because, along with the economic growth it may increase the amount of other pollutants.

#### It’s sustainable – data proves we’re entering the golden age

**Hausfather 21** – a climate scientist and energy systems analyst whose research focuses on observational temperature records, climate models, and mitigation technologies. He spent 10 years working as a data scientist and entrepreneur in the cleantech sector, where he was the lead data scientist at Essess, the chief scientist at C3.ai, and the cofounder and chief scientist of Efficiency 2.0. He also worked as a research scientist with Berkeley Earth, was the senior climate analyst at Project Drawdown, and the US analyst for Carbon Brief. He has masters degrees in environmental science from Yale University and Vrije Universiteit Amsterdam and a PhD in climate science from the University of California, Berkeley. (Zeke, "Absolute Decoupling of Economic Growth and Emissions in 32 Countries," Breakthrough Institute, 4-6-2021, https://thebreakthrough.org/issues/energy/absolute-decoupling-of-economic-growth-and-emissions-in-32-countries, Accessed 4-11-2021, LASA-SC)

The past 30 years have seen immense progress **in improving the quality of life for much of humanity**. Extreme poverty — the number of people living on less than $1.90 per day — has fallen by nearly two-thirds, from 1.9 **billion to** around 650 **million**. Life expectancy has risen in most of the world, along with literacy and access to education, while infant mortality has fallen. Despite perceptions to the contrary, **the average person born today is likely to have access to more opportunities and have a better quality of life than at any other point in human history**. Much of this increase in human wellbeing has been propelled by rapid economic growth driven largely by state-led industrial policy, particularly in poor-to-middle income countries. However, this growth has come at a cost: between 1990 and 2019, global emissions of CO2 **increased by 56%.** Historically, economic growth has been closely linked to increased energy consumption — and increased CO2 emissions in particular — leading some to argue that a more prosperous world is one that necessarily has more impacts on our natural environment and climate. There is a lively academic debate about our ability to “absolutely decouple” emissions and growth — that is, the extent to which the adoption of clean energy technology can allow emissions to decline while economic growth continues. Over the past 15 years, however, **something has begun to change.** Rather than a 21st century dominated by coal that energy modelers foresaw, **global coal use peaked in 2013 and is now in structural decline**. We have succeeded in making clean energy cheap, with solar power and battery storage costs falling 10-fold since 2009. The world produced more electricity from clean energy — solar, wind, hydro, and nuclear — than from coal over the past two years. And, according to some major oil companies, **peak oil is upon us** — not because we have run out of cheap oil to produce, but because demand is falling and companies expect further decline as consumers increasingly shift to electric vehicles. The world has long been experiencing a relative **decoupling** between economic growth and CO2 emissions, with the emissions per unit of GDP **falling for the past 60 years**. This is the case even in countries like **India and China** that have been undergoing rapid economic growth. But relative decoupling alone is inadequate in a world where global CO2 emissions need to peak and decline in the next decade to give us any chance at limiting warming to well below 2℃, in line with Paris Agreement targets. Thankfully, there is increasing evidence that the world is on track **to absolutely decouple CO2 emissions and economic growth** — with global CO2 emissions potentially having peaked in 2019 **and unlikely to increase substantially in the coming decade**. While an emissions peak is just the first and easiest step towards eventually reaching the net-zero emissions required to stop the world from continuing to warm, it demonstrates that linkages between emissions and economic activity are not an immutable law, but rather simply a result of our current means of energy production. In recent years we have seen more and more examples of absolute decoupling — economic growth accompanied by falling CO2 emissions. Since 2005, 32 countries with a population of at least one million people **have absolutely decoupled** emissions from economic growth, both for terrestrial emissions (those within national borders) and consumption emissions (emissions embodied in the goods consumed in a country). This includes the United States, Japan, Mexico, Germany, United Kingdom, France, Spain, Poland, Romania, Netherlands, Belgium, Portugal, Sweden, Hungary, Belarus, Austria, Bulgaria, El Salvador, Singapore, Denmark, Finland, Slovakia, Norway, Ireland, New Zealand, Croatia, Jamaica, Lithuania, Slovenia, Latvia, Estonia, and Cyprus. Figure 1, below, shows the declines in territorial emissions (blue) and increases in GDP (red). To qualify as having experienced absolute decoupling, we require countries included in this analysis to pass four separate filters: a population of at least one million (to focus the analysis on more representative cases), declining territorial emissions over the 2005-2019 period (based on a linear regression), declining consumption emissions, and increasing real GDP (on a purchasing power parity basis, using constant 2017 international $USD). We chose not to include 2020 in this analysis because it is not particularly representative of longer-term trends, and consumption and territorial emissions estimates are not yet available for many countries. There is a wide range of rates of economic growth between 2005-2019 among countries experiencing absolute decoupling. Somewhat counterintuitively, there is no significant relationship between the rate of economic growth and the magnitude of emissions reductions within the group. **While it is unlikely that there is not at least some linkage between the two factors, there are plenty of examples of countries (e.g., Singapore, Romania, and Ireland) experiencing both extremely rapid economic growth and large reductions in CO2 emissions.** One of the primary criticisms of some prior analyses of absolute decoupling is that they ignore **leakage**. Specifically, the offshoring of manufacturing from high-income countries over the past three decades to countries like China has led to “illusory” drops in emissions, where the emissions associated with high-income country consumption are simply shipped overseas and no longer show up in territorial emissions accounting. There is some truth in this critique, as there was a large increase in emissions embodied in imports from developing countries between 1990 and 2005. After 2005, however, structural changes in China and a growing domestic market led to a reversal of these trends; the amount of emissions “exported” from developed countries to developing countries **has actually declined over the past 15 years.** This means that, for many countries, both territorial emissions and consumption emissions (which include any emissions “exported” to other countries) **have jointly declined**. In fact, on average, consumption emissions have been declining slightly faster than territorial emissions since 2005 in the 32 countries we identify as experiencing absolute decoupling. Figure 2, below, shows the change in consumption emissions (teal) and GDP (red) between 2005 and 2019. There is a pretty wide variation in the extent to which these countries have reduced their territorial and consumption emissions since 2005. Some countries — such as the UK, Denmark, Finland, and Singapore – have seen territorial emissions fall faster than consumption emissions, while the US, Japan, Germany, and Spain (among others) have seen consumption emissions fall faster. Figure 3 shows reductions in consumption and territorial emissions for each country, with the size of the dot representing the size of the population in 2019. **Absolute decoupling is possible.** There is no physical law requiring economic growth — and broader increases in human wellbeing — to necessarily be linked to CO2 emissions. All of the **services that we rely on today that emit fossil fuels** — electricity, transportation, heating, food — can in principle **be replaced by near-zero carbon alternatives**, though these are more mature in some sectors (electricity, transportation, buildings) than in others (industrial processes, agriculture).

#### No limits to growth---solar, nuclear, and fusion energy solve climate change better than degrowth

Michael Liebreich 18, Visiting Professor at Imperial College’s Energy Future Lab, “The Secret of Eternal Growth,” 10/29/18, http://ifreetrade.org/article/the\_secret\_of\_eternal\_growth\_the\_physics\_behind\_pro\_growth\_environmentalism

The earth, however, is not an isolated system. It may be nearly closed, exchanging limited matter across the planetary boundary, but it is far from isolated, as it receives a huge daily flux of energy from the sun and radiates almost as much away to space. In his book, Georgescu-Roegen even acknowledged the existence of huge solar energy fluxes, but that didn’t stop him from basing his seminal work on a scientific error. Later in his career, after ruefully acknowledging his mistake, he invented a Fourth Law of Thermodynamics, claiming that “material entropy” would forever prevent materials from being perfectly recycled. Pure fake science. Around the same time as Georgescu-Roegen was making up thermodynamic laws, a group of concerned environmentalists calling themselves the Club of Rome invited one of the doyens of the new field of computer modelling, Jay Forrester, to create a simulation of the world economy and its interaction with the environment. In 1972 his marvellous black box produced another best-seller, Limits to Growth (iv), which purported to prove that almost every combination of economic parameters ended up not just with growth slowing, but with an overshoot and collapse. This finding, so congenial to the model’s commissioners, stemmed entirely from errors in its structure, as pointed out by a then fresh-faced young economics professor at Yale, William Nordhaus. A third foundational work in the degrowth canon is Steady State Economics (v) by Herman Daly, later Senior Economist in the Environment Department of the World Bank. In it he explains that “the economy is an open subsystem of a finite and nongrowing ecosystem. Any subsystem of a finite nongrowing system must itself at some point also become nongrowing.” It’s a repeat of Georgescu-Roegen’s error. Daly must have known it too, since he noted that six days’ worth of radiation from the sun contained more useful energy (or exergy, to give it its correct name) than that embodied in all the fossil fuel reserves known at the time. The point here is not that solar power is the key to endless growth, though it could well be - nuclear fission and fusion are other strong contenders. The point is that when you scratch the surface of any of the seminal tracts of the degrowth movement, you find they are based on the same fake science, right through to the present day. Jeremy Rifkin’s 1980 Entropy: a New World View (vi) states that “here on earth material entropy is continually increasing and must ultimately reach a maximum”. In 2009, Professor Tim Jackson, the favourite anti-capitalist of the TED generation, published Prosperity Without Growth (vii). In it he pays homage to Daly’s “pioneering case for a ‘steady state economy’” and cheerfully recommends it to students hungering for alternative wisdom – either not understanding or not caring that it is based on a fallacy. This matters because, for all that the neo-liberal world economy has delivered extraordinary improvements in living standards – in life span, levels of education, infant survival, maternal health, poverty reduction, leisure, and so on (viii) – it is currently failing to address severe, systemic environmental challenges, first and foremost among them climate change. Unless the free-trade, pro-growth, pro-trade right offers a coherent plan, it is ceding the argument to the degrowth, anti-capitalist, anti-trade left. Climate change is real, serious, and urgent. That recent IPCC 1.5°C report is based on rigorous research. Of course climate change is being co-opted by the “Academic Grievance Studies” brigade (ix), but that doesn’t make the underlying physical science less real. As the world continues to burn through its remaining carbon budget, as temperatures continue to rise, as the ‘signal’ of climate damage becomes clearer against the background ‘noise’ of weather, the demand for dramatic action will only increase. Limiting the impact of climate change will require the application of technology, both new and yet-to-be-developed, on a heroic scale. Destroying the ability of the world economy to deliver these solutions is the very opposite of what we should be doing. And that is where Nordhaus and Romer come in. Romer’s great contribution was to identify the contribution of knowledge to economic growth. Before his Endogenous Growth Theory, no one could explain differences in growth rates of as much as 10 percent between countries at a similar stage of development. Romer’s work is the perfect riposte to those who think that economic growth is the same thing as ever-increasing physical material use and pollution; it is also the perfect riposte to those who believe that extractive industries can ever deliver long-term wealth and those who believe the same of agricultural subsidies and import tariffs. Nordhaus, for his part, was the creator of the first Integrated Assessment Models, bringing together the physics of climate change, its economic impact, and the functioning of the economy. He was also the first person to suggest that attaching a cost to emissions – low at first but rising – would squeeze greenhouse gases out of the economy. Nordhaus is no climate fundamentalist, famously diverging from the view propounded in the Stern Review, that the world needs super-high carbon taxes immediately. Nordhaus accepted that environmental challenges and climate change will act as a drag on the economy but, unlike others before him, he quantified the drag and showed that it is highly unlikely to reverse economic growth. Nordhaus and Romer are not the only Nobel Prize-winners whose work suggests that an open, liberal, trade-friendly economy – though one pricing in externalities – will do a better job of addressing climate change and other environmental problems than stalling or reversing economic growth. Simon Kuznets, who won the 1971 Nobel Prize for Economics (x), described how a variable can get worse in the early phases of a country’s development, and then improve as growth continues. He focused mainly on inequality, but the Environmental Kuznets Curves has been shown to govern most forms of local pollution. Ilya Prigogine won the 1977 Nobel Prize in Chemistry for his research into non-equilibrium “dissipative” structures – how a flow of energy across closed system can drive the creation of “order out of chaos” (xi). This is a real scientific expert on entropy proving that the economy can grow for as long as there is still a sun in the sky (which would give us about another five billion years).

#### Causes space colonization.

Thiessen ‘20 – writes a twice-weekly column for The Post on foreign and domestic policy. He is a fellow at the American Enterprise Institute, and the former chief speechwriter for President George W. Bush. (Marc A., "SpaceX’s success is one small step for man, one giant leap for capitalism," Washington Post, 6-1-2020, https://www.washingtonpost.com/opinions/2020/06/01/spacexs-success-is-one-small-step-man-one-giant-leap-capitalism/, Accessed 6-27-2021, LASA-SC)

It was one small step for man, one giant leap for capitalism. Only three countries have ever launched human beings into orbit. This past weekend, SpaceX became the first private company ever to do so, when it sent its Crew Dragon capsule into space aboard its Falcon 9 rocket and docked with the International Space Station. This was accomplished by a company Elon Musk started in 2002 in a California strip mall warehouse with just a dozen employees and a mariachi band. At a time when our nation is debating the merits of socialism, SpaceX has given us an incredible testament to the power of American free enterprise. While the left is advocating unprecedented government intervention in almost every sector of the U.S. economy, from health care to energy, today Americans are celebrating the successful privatization of space travel. If you want to see the difference between what government and private enterprise can do, consider: It took a private company to give us the first space vehicle with touch-screen controls instead of antiquated knobs and buttons. It took a private company to give us a capsule that can fly entirely autonomously from launch to landing — including docking — without any participation by its human crew. It also took a private company to invent a reusable rocket that can not only take off but land as well. When the Apollo 11 crew reached the moon on July 20, 1969, Neil Armstrong declared “the Eagle has landed.” On Saturday, SpaceX was able to declare that the Falcon had landed when its rocket settled down on a barge in the Atlantic Ocean — ready to be used again. That last development will save the taxpayers incredible amounts of money. The cost to NASA for launching a man into space on the space shuttle orbiter was $170 million per seat, compared with just $60 million to $67 million on the Dragon capsule. The cost for the space shuttle to send a kilogram of cargo into to space was $54,500; with the Falcon rocket, the cost is just $2,720 — a decrease of 95 percent. And while the space shuttle cost $27.4 billion to develop, the Crew Dragon was designed and built for just $1.7 billion — making it the lowest-cost spacecraft developed in six decades. SpaceX did it in six years — far faster than the time it took to develop the space shuttle. The private sector does it better, cheaper, faster and more efficiently than government. Why? Competition. Today, SpaceX has to compete with a constellation of private companies — including legacy aerospace firms such as Orbital ATK and United Launch Alliance and innovative start-ups such as Blue Origin (which is designing a Mars lander and whose owner, Jeff Bezos, also owns The Post) and Virgin Orbit (which is developing rockets than can launch satellites into space from the underside of a 747, avoiding the kinds of weather that delayed the Dragon launch). In the race to put the first privately launched man into orbit, upstart SpaceX had to beat aerospace behemoth Boeing and its Starliner capsule to the punch. It did so — for more than $1 billion less than its competitor. That spirit of competition and innovation will revolutionize space travel in the years ahead. Indeed, Musk has his sights set far beyond Earth orbit. Already, SpaceX is working on a much larger version of the Falcon 9 reusable rocket called Super Heavy that will carry a deep-space capsule named Starship capable of carrying up to 100 people to the moon and eventually to Mars. Musk’s goal — the reason he founded SpaceX — is to colonize Mars and make humanity a multiplanetary species. He has set a goal of founding a million-person city on Mars by 2050 complete with iron foundries and pizza joints. Can it be done? Who knows. But this much is certain: Private-sector innovation is opening the door to a new era of space exploration. Wouldn’t it be ironic if, just as capitalism is allowing us to explore the farthest reaches of our solar system, Americans decided to embrace socialism back here on Earth?

#### That solves every impact

Drake '16 – a science journalist and contributing writer at National Geographic. She earned an A.B. in biology, psychology, and dance at Cornell University, worked in a clinical genetics lab at The Johns Hopkins University School of Medicine, then returned to Cornell for her Ph.D. in genetics and development. (Bynadia, "Elon Musk: A Million Humans Could Live on Mars By the 2060s," Science, 9-27-2016, https://www.nationalgeographic.com/science/article/elon-musk-spacex-exploring-mars-planets-space-science, Accessed 6-22-2021, LASA-SC)

In perhaps the most eagerly anticipated aerospace announcement of the year, SpaceX founder Elon Musk has revealed his grand plan for establishing a human settlement on Mars. In short, Musk thinks it’s possible to begin shuttling thousands of people between Earth and our smaller, redder neighbor sometime within the next decade or so. And not too long after that—perhaps 40 or a hundred years later, Mars could be home to a self-sustaining colony of a million people. “This is not about everyone moving to Mars, this is about becoming multiplanetary,” he said on September 27 at the International Astronautical Congress in Guadalajara, Mexico. “This is really about minimizing existential risk and having a tremendous sense of adventure.” Musk’s timeline sounds ambitious, and that's something he readily acknowledges. “I think the technical outline of the plan is about right. He also didn’t pretend that it was going to be easy and that they were going to do it in ten years,” says Bobby Braun, NASA’s former chief technologist who’s now at Georgia Tech University. “I mean, who’s to say what’s possible in a hundred years?” And for those wondering whether we should go at all, the reason for Musk making Mars an imperative is simple. “The future of humanity is fundamentally going to bifurcate along one of two directions: Either we’re going to become a multiplanet species and a spacefaring civilization, or we’re going be stuck on one planet until some eventual extinction event,” Musk told Ron Howard during an interview for National Geographic Channel’s MARS, a global event series that premieres worldwide on November 14. “For me to be excited and inspired about the future, it’s got to be the first option. It’s got to be: We’re going to be a spacefaring civilization.” Mars Fleet Though he admitted his exact timeline is fuzzy, Musk thinks it’s possible humans could begin flying to Mars by the mid-2020s. And he thinks the plan for getting there will go something like this: It starts with a really big rocket, something at least 200 feet tall when fully assembled. In a simulation of what SpaceX calls its Interplanetary Transport System, a spacecraft loaded with astronauts will launch on top of a 39-foot-wide booster that produces a whopping 28 million pounds of thrust. Using 42 Raptor engines, the booster will accelerate the assemblage to 5,374 miles an hour. Overall, the whole thing is 3.5 times more powerful than NASA’s Saturn V, the biggest rocket built to date, which carried the Apollo missions to the moon. Perhaps not coincidentally, the SpaceX rocket would launch from the same pad, 39A, at Kennedy Space Center in Cape Canaveral, Florida. The rocket would deliver the crew capsule to orbit around Earth, then the booster would steer itself toward a soft landing back at the launch pad, a feat that SpaceX rocket boosters have been doing for almost a year now. Next, the booster would pick up a fuel tanker and carry that into orbit, where it would fuel the spaceship for its journey to Mars. Once en route, that spaceship would deploy solar panels to harvest energy from the sun and conserve valuable propellant for what promises to be an exciting landing on the Red Planet. As Musk envisions it, fleets of these crew-carrying capsules will remain in Earth orbit until a favorable planetary alignment brings the two planets close together—something that happens every 26 months. “We’d ultimately have upward of a thousand or more spaceships waiting in orbit. And so the Mars colonial fleet would depart en masse,” Musk says. The key to his plan is reusing the various spaceships as much as possible. “I just don’t think there’s any way to have a self-sustaining Mars base without reusability. I think this is really fundamental,” Musk says. “If wooden sailing ships in the old days were not reusable, I don’t think the United States would exist.” Musk anticipates being able to use each rocket booster a thousand times, each tanker a hundred times, and each spaceship 12 times. At the beginning, he imagines that maybe a hundred humans would be hitching a ride on each ship, with that number gradually increasing to more than 200. By his calculations, then, putting a million people on Mars could take anywhere from 40 to a hundred years after the first ship launches. And, no, it would not necessarily be a one-way trip: “I think it’s very important to give people the option of returning,” Musk says. Colonizing Mars After landing a few cargo-carrying spacecraft without people on Mars, starting with the Red Dragon capsule in 2018, Musk says the human phase of colonization could begin. For sure, landing a heavy craft on a planet with a thin atmosphere will be difficult. It was tough enough to gently lower NASA’s Curiosity rover to the surface, and at 2,000 pounds, that payload weighed just a fraction of Musk’s proposed vessels. For now, Musk plans to continue developing supersonic retrorockets that can gradually and gently lower a much heavier spacecraft to the Martian surface, using his reusable Falcon 9 boosters as a model. And that’s not all these spacecraft will need: Hurtling through the Martian atmosphere at supersonic speeds will test even the most heat-tolerant materials on Earth, so it’s no small task to design a spacecraft that can withstand a heated entry and propulsive landing—and then be refueled and sent back to Earth so it can start over again. The first journeys would primarily serve the purpose of delivering supplies and establishing a propellant depot on the Martian surface, a fuel reservoir that could be tapped into for return trips to Earth. After that depot is set up and cargo delivered to the surface, the fun can (sort of) begin. Early human settlers will need to be good at digging beneath the surface and dredging up buried ice, which will supply precious water and be used to make the cryo-methane propellant that will power the whole enterprise. As such, the earliest interplanetary spaceships would probably stay on Mars, and they would be carrying mostly cargo, fuel, and a small crew: “builders and fixers” who are “the hearty explorer type,” Musk said to Howard. “Are you prepared to die? If that’s OK, then you’re a candidate for going.” While there will undoubtedly be intense competition and lots of fanfare over the first few seats on a Mars-bound mission, Musk worries that too much emphasis will be placed on those early bootprints. “In the sort of grander historical context, what really matters is being able to send a large number of people, like tens of thousands if not hundreds of thousands of people, and ultimately millions of tons of cargo,” he says.

#### Capitalism solves war – its anti-imperialist.

Mousseau 19, Michael. "The end of war: How a robust marketplace and liberal hegemony are leading to perpetual world peace." International Security 44.1 (2019): 160-196. Props to DML for finding. (Professor in the School of Politics, Security, and International Affairs at the University of Central Florida)//Elmer

Is war becoming obsolete? There is wide agreement among scholars that war has been in sharp decline since the defeat of the Axis powers in 1945, even as there is little agreement as to its cause.1 Realists reject the idea that this trend will continue, citing states' concerns with the “security dilemma”: that is, in anarchy states must assume that any state that can attack will; therefore, power equals threat, and changes in relative power result in conflict and war.2 Discussing the rise of China, Graham Allison calls this condition “Thucydides's Trap,” a reference to the ancient Greek's claim that Sparta's fear of Athens' growing power led to the Peloponnesian War.3 This article argues that there is no Thucydides Trap in international politics. Rather, the world is moving rapidly toward permanent peace, possibly in our lifetime. Drawing on economic norms theory,4 I show that what sometimes appears to be a Thucydides Trap may instead be a function of factors strictly internal to states and that these factors vary among them. In brief, leaders of states with advanced market-oriented economies have foremost interests in the principle of self-determination for all states, large and small, as the foundation for a robust global marketplace. War among these states, even making preparations for war, is not possible, because they are in a natural alliance to preserve and protect the global order. In contrast, leaders of states with weak internal markets have little interest in the global marketplace; they pursue wealth not through commerce, but through wars of expansion and demands for tribute. For these states, power equals threat, and therefore they tend to balance against the power of all states. Fearing stronger states, however, minor powers with weak internal markets tend to constrain their expansionist inclinations and, for security reasons, bandwagon with the relatively benign market-oriented powers. I argue that this liberal global hierarchy is unwittingly but systematically buttressing states' embrace of market norms and values that, if left uninterrupted, is likely to culminate in permanent world peace, perhaps even something close to harmony. My argument challenges the realist assertion that great powers are engaged in a timeless competition over global leadership, because hegemony cannot exist among great powers with weak markets; these inherently expansionist states live in constant fear and therefore normally balance against the strongest state and its allies.5 Hegemony can exist only among market-oriented powers, because only they care about global order. Yet, there can be no competition for leadership among market powers, because they always agree with the goal of their strongest member (currently the United States) to preserve and protect the global order