## Framing

**The standard is maximizing expected wellbeing, or utilitarianism**

**1] Util is a lexical pre-requisite to any other framework: Threats to bodily security and life preclude the ability for moral actors to effectively utilize and act upon other moral theories since they are in a constant state of crisis that inhibit the ideal moral conditions which other theories presuppose – so, util comes first.**

**2] Use epistemic modesty for evaluating the framework debate: that means compare the probability of the framework times the magnitude of the impact under a framework. This maximizes the probability of achieving net most moral value**

**3] Default to util if there’s any uncertainty**

Walter **Sinnott-Armstrong 14** [American philosopher. He specializes in ethics, epistemology, and more recently in neuroethics, the philosophy of law, and the philosophy of cognitive science], "Consequentialism", The Stanford Encyclopedia of Philosophy (Spring 2014 Edition), Edward N. Zalta (ed), BE

Even if consequentialists can accommodate or explain away common moral intuitions, that might seem only to answer objections without yet giving any positive reason to accept consequentialism. However, **most people begin with the presumption that we morally ought to make the world better when we can. The question then is only whether any moral constraints or moral options need to be added to the basic consequentialist factor in moral reasoning.** (Kagan 1989, 1998) If no objection reveals any need for anything beyond consequences, then consequences alone seem to determine what is morally right or wrong, just as consequentialists claim.

**4] Extinction comes first under any framework**

**Pummer 15** [Theron, Junior Research Fellow in Philosophy at St. Anne's College, University of Oxford. “Moral Agreement on Saving the World” Practical Ethics, University of Oxford. May 18, 2015] AT

There appears to be lot of disagreement in moral philosophy. Whether these many apparent disagreements are deep and irresolvable, I believe there is at least one thing it is reasonable to agree on right now, whatever general moral view we adopt: that it is very important to reduce the risk that all intelligent beings on this planet are eliminated by an enormous catastrophe, such as a nuclear war. How we might in fact try to reduce such existential risks is discussed elsewhere. My claim here is only that we – whether we’re consequentialists, deontologists, or virtue ethicists – should all agree that we should try to save the world. According to consequentialism, we should maximize the good, where this is taken to be the goodness, from an impartial perspective, of outcomes. Clearly one thing that makes an outcome good is that the people in it are doing well. There is little disagreement here. If the happiness or well-being of possible future people is just as important as that of people who already exist, and if they would have good lives, it is not hard to see how reducing existential risk is easily the most important thing in the whole world. This is for the familiar reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. There are so many possible future people that reducing existential risk is arguably the most important thing in the world, even if the well-being of these possible people were given only 0.001% as much weight as that of existing people. Even on a wholly person-affecting view – according to which there’s nothing (apart from effects on existing people) to be said in favor of creating happy people – the case for reducing existential risk is very strong. As noted in this seminal paper, this case is strengthened by the fact that there’s a good chance that many existing people will, with the aid of life-extension technology, live very long and very high quality lives. You might think what I have just argued applies to consequentialists only. There is a tendency to assume that, if an argument appeals to consequentialist considerations (the goodness of outcomes), it is irrelevant to non-consequentialists. But **that is a huge mistake.** Non-consequentialism is the view that there’s more that determines rightness than the goodness of consequences or outcomes; **it is not the view that the latter don’t matter**. Even John Rawls wrote, “All ethical doctrines worth our attention take consequences into account in judging rightness. One which did not would simply be irrational, crazy.” **Minimally plausible versions of deontology and virtue ethics must be concerned in part with promoting the good**, from an impartial point of view. They’d thus imply very strong reasons to reduce existential risk, at least when this doesn’t significantly involve doing harm to others or damaging one’s character. What’s even more surprising, perhaps, is that even if our own good (or that of those near and dear to us) has much greater weight than goodness from the impartial “point of view of the universe,” indeed even if the latter is entirely morally irrelevant, we may nonetheless have very strong reasons to reduce existential risk. Even egoism, the view that each agent should maximize her own good, might imply strong reasons to reduce existential risk. It will depend, among other things, on what one’s own good consists in. If well-being consisted in pleasure only, it is somewhat harder to argue that egoism would imply strong reasons to reduce existential risk – perhaps we could argue that one would maximize her expected hedonic well-being by funding life extension technology or by having herself cryogenically frozen at the time of her bodily death as well as giving money to reduce existential risk (so that there is a world for her to live in!). I am not sure, however, how strong the reasons to do this would be. But views which imply that, if I don’t care about other people, I have no or very little reason to help them are not even minimally plausible views (in addition to hedonistic egoism, I here have in mind views that imply that one has no reason to perform an act unless one actually desires to do that act). To be minimally plausible, egoism will need to be paired with a more sophisticated account of well-being. To see this, it is enough to consider, as Plato did, the possibility of a ring of invisibility – suppose that, while wearing it, Ayn could derive some pleasure by helping the poor, but instead could derive just a bit more by severely harming them. Hedonistic egoism would absurdly imply she should do the latter. To avoid this implication, egoists would need to build something like the meaningfulness of a life into well-being, in some robust way, where this would to a significant extent be a function of other-regarding concerns (see chapter 12 of this classic intro to ethics). But once these elements are included, we can (roughly, as above) argue that this sort of egoism will imply strong reasons to reduce existential risk. Add to all of this Samuel Scheffler’s recent intriguing arguments (quick podcast version available here) that most of what makes our lives go well would be undermined if there were no future generations of intelligent persons. On his view, my life would contain vastly less well-being if (say) a year after my death the world came to an end. So obviously if Scheffler were right I’d have very strong reason to reduce existential risk. **We should also take into account moral uncertainty.** What is it reasonable for one to do, when one is uncertain not (only) about the empirical facts, but also about the moral facts? I’ve just argued that there’s agreement among minimally plausible ethical views that we have strong reason to reduce existential risk – not only consequentialists, but also deontologists, virtue ethicists, and sophisticated egoists should agree. But even those (hedonistic egoists) who disagree should have a significant level of confidence that they are mistaken, and that one of the above views is correct. Even if they were 90% sure that their view is the correct one (and 10% sure that one of these other ones is correct), they would have pretty strong reason, from the standpoint of moral uncertainty, to reduce existential risk. Perhaps most disturbingly still, even if we are only 1% sure that the well-being of possible future people matters, it is at least arguable that, from the standpoint of moral uncertainty, reducing existential risk is the most important thing in the world. Again, this is largely for the reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. (For more on this and other related issues, see this excellent dissertation). Of course, it is uncertain whether these untold trillions would, in general, have good lives. It’s possible they’ll be miserable. It is enough for my claim that there is moral agreement in the relevant sense if, at least given certain empirical claims about what future lives would most likely be like, all minimally plausible moral views would converge on the conclusion that we should try to save the world. While there are some non-crazy views that place significantly greater moral weight on avoiding suffering than on promoting happiness, for reasons others have offered (and for independent reasons I won’t get into here unless requested to), they nonetheless seem to be fairly implausible views. And even if things did not go well for our ancestors, I am optimistic that they will overall go fantastically well for our descendants, if we allow them to. I suspect that most of us alive today – at least those of us not suffering from extreme illness or poverty – have lives that are well worth living, and that things will continue to improve. Derek Parfit, whose work has emphasized future generations as well as agreement in ethics, described our situation clearly and accurately: “We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy…. Our descendants might, I believe, make the further future very good. But that good future may also depend in part on us. If our selfish recklessness ends human history, we would be acting very wrongly.” (From chapter 36 of On What Matters)

## Progress is GOOD- we need to solve issues that harm disabled people

#### Trend lines prove the world is getting better for folks with disabilities---that’s not to say it’s perfect but progress via institutional reforms are possible and desirable

Lee Lawrence, Christian Science Monitor, “Possibility unbound: 25 years of progress for those with disability,” ’14, http://www.csmonitor.com/USA/Society/2014/1116/Possibility-unbound-25-years-of-progress-for-those-with-disability

There is no question that, to many with impairments, **the modern world can still prove a daunting and sometimes downright inhospitable place**. But nearly 25 years after President George H.W. Bush signed the Americans with Disabilities Act (ADA), **an increasing number in the United States are living** more empowered, less restricted lives.The telecommunications infrastructure and all those man-made spaces collectively referred to as “the built environment” – which includes cities, architecture, transportation, even parks – “are **dramatically more accessible** **today than they were in 1990** when they passed the ADA,” says Andrew Imparato, executive director of the Association of University Centers on Disabilities and former president of the American Association of People with Disabilities. Services, too, have expanded, from transit systems offering riders with disabilities free familiarization and safety programs to specialized guides at museums to a growing number of designers developing clothing with a variety of specific needs in mind. The ADA – “our crowning achievement,” as Mr. Imparato calls it – **set the country on a** new course. Those who have come of age since 1990 have “grown up in more integrated settings and generally have higher expectations for what is possible for people with disabilities to achieve in work and in life than did the generations that came before them,” Imparato says. **Advances in technology have triggered a** sea change. Mainstream innovations such as Siri double as assistive technologies, while robotics, bionics, and 3-D printers have revolutionized the design and manufacture of prostheses. And mobile phones and tablets have opened an entirely new field: apps. An ever-growing list of applications ranges from hearing aids to maps for people with low vision to communications methods for children with autism. Looking forward, experts point to another major factor in advancing quality of life: **the bubble of aging baby boomers**. Among people under 65, an estimated 8.5 to 14 percent have a disability. In the over-65 population, some estimates are as high as **50 percent.** Just as baby boomers have set trends in everything from spending habits to dating and child rearing, boomers with disabilities are not going to scurry off to the margins of society. **They’re going to** demand **services and products.** Many believe this will benefit society at large. At the Indiana Institute on Disability and Community, Phil Stafford talks about progress “on the cultural front .... I think that those without disabilities have a kind of a taken-for-granted perspective on the world that we are shocked out of when we understand what daily barriers people might encounter.” This might be an announcement some can’t hear, a website others can’t access, or doorknobs yet others can’t grasp. The light goes on, Mr. Stafford says, when people see “someone use their elbow to open a door that has a lever handle. People might say ‘I never thought of that.’ It’s not great world-shaking change, but it’s those minor encounters that **make us aware.”**

#### Litigation strategies and activism prove engagement with the law is possible and effective

Lee Lawrence, Christian Science Monitor, “Possibility unbound: 25 years of progress for those with disability,” ’14, http://www.csmonitor.com/USA/Society/2014/1116/Possibility-unbound-25-years-of-progress-for-those-with-disability

Society disabled, not people

Historically, people with disabilities were often kept at home or in institutions, under the presumption they couldn’t cope with the so-called normal world. Helen Keller upended that myth long before the ADA, and widespread shifts in attitudes began to crystallize in the 1970s. Following the model of the civil rights movement, activists lobbied and protested for the implementation of anti-discrimination provisions in the 1973 Rehabilitation Act to make the services of companies such as Greyhound accessible to people with disabilities. By the late 1980s, a **new ethic** began to gain currency. Rather than viewing individuals as faulty, the focus shifted to the barriers in society that kept the blind student from accessing information, the wheelchair user from going to the movies, the deaf analyst from participating in corporate meetings. In other words, society was broken and in need of fixing. The decade ended on a high, with the signing of the ADA. The law defined disability broadly, as any condition that substantially limits one or more major life activities. “It was not a revolutionary law,” Imparato says. “It was an evolutionary law.” When dealing with an existing building, he explains, “you only need to make changes that are readily achievable and are not going to be crazy expensive.” Anything new, on the other hand, has to be designed from the start to be accessible. “So that concept, over time, produces a more accessible environment,” he says. The time it can take is illustrated by the experience of author and motivational speaker Rosemarie Rossetti. In 1995, when she and her husband built their home in Columbus, Ohio, they “purposefully built wider doors and a master suite on the first floor” in case one of their mothers someday moved in. Three years later, Ms. Rossetti discovered how inadequate that was when a bicycle accident left her paralyzed from the waist down. She couldn’t negotiate the step to the front door. Once inside, the wheels of her chair sank into the padded carpeting. Faucets were out of reach. And she lost all privacy: She could roll into the bathroom, but the layout precluded her from closing the door. After trying “to shoehorn a floor plan that worked into the existing house,” Rossetti and her husband, Mark Leder, started afresh. They bought land and researched universal design, which offers such solutions as pocket doors that maximize usable space for wheelchair users and suit those with limited strength, precarious balance, and hand or shoulder problems; various intensities of halogen and LED lights activated by motion sensors; non-slippery outdoor pavers; and flexibility in design that allows users to add, say, transmitters that translate doorbells, a baby’s cry, the beep of a smoke alarm into flashing lights or vibrations in a pillow. They decided to create a home that would accommodate both the seated Rossetti and her 6-foot-4 husband and serve as a model for students, professionals, and the public at large. With the help of corporate sponsors, they built the Universal Design Living Laboratory, a 3,500-square-foot ranch house as green as it is accessible and attractive. A gently sloping entryway leads into a spacious home with hardwood floors and wide doorways, kitchen counters of various heights, roll-in showers with high and low shelves, and such features as sinks with nothing below them and oven doors that swing sideways so Rossetti can move in close. “I’ve gone from frustration to freedom, from dependence to independence, from pain to no pain, psychologically, physically, emotionally,” she says. Ignorance of disabilities isn’t a cruel mind-set One reason universal design has not caught on more widely is that baby boomers, the contemporary engine of change, tend to assume they will be spared any age-related decline. “They’re in denial,” says Michael Thomas of the Design Collective Group in Palm Springs, Calif. For years he has advocated an “aging in place” approach to building and remodeling, but now uses a neutral slogan: “Stay in Place.” This is exactly what 91 percent of Americans say they want to do, according to a recent survey by the Global Social Enterprise Initiative at Georgetown University in Washington, D.C., and the Philips company. While 96 percent say it is important to remain as independent as possible as they age, only 21 percent plan to retrofit their homes to help achieve this goal. With boomers, Mr. Thomas invokes resale value, visits by older relatives and friends, or the possibility that a child, even a grandchild, might use crutches for a spell. Basically, he talks about “everything except them” when suggesting boomer clients align closets between floors so they might later add an elevator or install plywood behind bathroom walls to anchor future balance bars. These things benefit older people as well as people with disabilities, and, deny it as they might, boomers will create a surge in demand. The same principles apply to cyberspace, where people shop, meet, and work. As with bricks and mortar construction, it’s cheaper and more efficient to make programs and websites accessible from the start. Not that absolutely everybody’s needs can be met, says Shawn Henry, a researcher at the Massachusetts Institute of Technology who focuses on Web accessibility for the World Wide Web Consortium known as W3C. “But,” she says, “you can make it flexible,” which is much easier to do on the Web than on earth. With a click of a button, users can access closed captioning; change font sizes or contrast; switch controls to a keyboard, puffer, or eye movement tracker; or activate a screen reader or Braille display. “People accessing the Web on mobile devices have helped our case,” Ms. Henry adds. Sites that convey information solely through color, rely on audio prompts, or include long, complex sentences, for example, don’t work well on smart phones. These devices often have a limited range of color, and their size makes it difficult to wade through dense texts, stymieing users with and without disabilities. Plus, users often go online in noisy places. This helps explain why a 2003 Microsoft study found that the majority of working-age adults were likely to benefit from accessible technology. But it first has to become widely available. A 2012 study indicates that most public library websites still do not comply with the accessibility standards required of government-funded institutions. The situation is worse among commercial websites. Less than 5 percent of online shopping sites meet the needs of people with disabilities, estimates Brian Landrigan, head of sales and marketing for the Paciello Group, which specializes in software accessibility. Most employers say they cannot find candidates with disabilities who have the right education and skills. But, says Mr. Landrigan, no company has asked him to ensure its online job applications are accessible. They simply don’t have any experience with a person with a disability, he says. “It’s not a cruel mind-set. It’s ignorance.” A need is a profit opportunity Like many Americans who have a disability, Ronnie Raymond has horror stories: Being left stranded by taxi drivers because they’re unwilling or not equipped to deal with her wheelchair; going to a doctor’s appointment and finding herself stuck at the top of steps, relegated to a closet-like space for treatment, or treated as a nuisance when she couldn’t leave her wheelchair for a better perch for tests or screenings; having fellow shareholders in her cooperative apartment building refuse to build a ramp even after she offered to pay for it. Even so, Raymond has seen **tremendous change**. When the courts sided with her in January 1999, the co-op added a ramp that blends with the architecture. After arriving at the doctor’s office recently to get a mammogram, Raymond followed the technician to a spacious room with a machine designed for standing or seated patients. The process, which five years ago lasted three hours and left her in tears, now takes less than an hour and includes no humiliations. And, **thanks in part to** Raymond’s own activism, the New York City Taxi & Limousine Commission announced in December 2013 that 50 percent of its medallion cabs will be wheelchair accessible by 2020. **Change has come largely from** litigation. “As important as the ADA has been,” says Stafford, at the Indiana institute, “it’s building for accessibility rather than building for everybody,” **so the law extends its reach** through individuals charging discrimination or the fear that this might happen. But **not all improvements are mandated**. The Red Lobster chain of restaurants, for example, did not introduce Braille and large-print menus in 2002 because it was legally required to. It isn’t. A staff member who was blind in one eye proposed the idea. For others, Ms. Joines says, “Heck, that’s market share and [they] want the market share, right? In a very competitive environment, people are interested in creating something that can be used by and is attractive to more people.”

#### Legislative changes pave the way for sustainable access---that has caused and will continue to produce a sea change in attitudes about people with disabilities.

Lee Lawrence, Christian Science Monitor, “Possibility unbound: 25 years of progress for those with disability,” ’14, http://www.csmonitor.com/USA/Society/2014/1116/Possibility-unbound-25-years-of-progress-for-those-with-disability

Sen is in the minority. Less than a third of people with disabilities have a job, according to the Research and Training Center on Disability Statistics and Demographics. Research on employers by the Employment and Disability Institute at Cornell University in Ithaca, N.Y., places SRA among the 19 percent of companies that have a fund earmarked for accommodations. Cornell researchers also found that most companies did not include people with disabilities when thinking about building a diverse workforce. The words appear in nondiscrimination clauses, but only 19 percent have internships targeting people with disabilities. Disability advocates hope that **legislation** President Obama signed in July will help bring more young people with disabilities into the labor force. Employment, they argue, is key to raising 28 percent of working-age adults with disabilities out of poverty and tearing down remaining barriers. For Imparato, **it’s a** bellwether. An increase will signal that education, transportation, health care, technology – all the systems necessary for people to hold a job – are functioning. And **as more people work together,** attitudes will change**.** Landrigan already sees this happening when he meets with clients and walks them through their websites, pointing out who they are excluding and how. Their reaction? “I would say it’s empathy.”

### 1NC-Education

#### Private companies are quickly getting ready to put humans on Mars—without them, even political will would mean another 20 years

Redfern 11/14—Martin Redfern; Martin Redfern studied geology at University College London. Since 1981 he has worked as an executive producer at the BBC World Service Science Unit; “Will we ever step foot on Mars?”; BBC; Nov 14 2021; <https://www.bbcearth.com/news/will-we-ever-set-foot-on-mars>; (AG DebateDrills)

Currently, a human mission to Mars take 20 years minimum—private companies have already signaled an ability to rapidly speed up the timeline After the Apollo Moon missions in the 1970s, sending astronauts to Mars seemed the next logical step, but it would be a ‘giant leap’, politically and financially. Space is big: while it took the Apollo astronauts only four days to reach the Moon, with present technology it would take about nine months to reach Mars. By the time the planets align favourably for a return, a complete mission might last two or three years. Throughout that time, the astronauts would need food, water and oxygen, plus protection from radiation. At this point, the success rate for robot missions does not inspire confidence. Russia has launched 21 Mars rockets to date, including five unmanned landers, but only two orbiters completed their missions. The US has been more successful, losing only five out of 23 missions. But there has yet to be a return mission. Clearly some more work is needed before we can contemplate sending humans to Mars. But, sooner or later, we will go. With the political will, it could be within 20 years. And one thing that can be done in the meantime is test human psychological resilience for such a mission. The current record holder for the longest spaceflight is the Russian astronaut Valeri Polyakov, who returned to Earth from Mir in March 1995 after 437 days in space. Such a feat tests the human body’s ability to withstand the muscle and bone loss associated with zero gravity, and is a psychological test of will and endurance. And while contact with astronauts on the International Space Station (ISS) is simple, as it takes only a fraction of a second to relay messages to and from Earth, radio signals take 20 minutes to reach Mars, so astronauts there will feel much more isolated, adding to the psychological stress of confinement with a small team. These testing conditions have been simulated on Earth in order to evaluate their effect on people. Mars 500 was a Russian/European/Chinese project between 2007 and 2011 in an isolation facility in a Moscow car park. It culminated in a 520-day stay by six male volunteers. They claimed to be in good health throughout, but some avoided exercise and hid from their colleagues, and four had difficulty sleeping. The latest simulation – Hawaii Space Exploration Analog and Simulation, run for NASA by the University of Hawaii – took place in the Mars-like landscape of Hawaii, 2,500m up the side of the Mauna Loa volcano. A team of six emerged from a year in isolation there on 28 August 2016. They had been allowed out on simulated Mars walks, but only wearing a full space suit; the rest of the time they were living in cramped conditions in a 100sq m geodesic dome. The European Space Agency also performs regular evaluations of the crew at the remote Concordia station in Antarctica to assess the effects of confinement during the long, dark polar winter. Mars Society president Robert Zubrin has a mission plan that, he believes, will be safer and cheaper than any other. It involves first launching an unmanned Earth Return Vehicle (ERV) that would land on Mars and use solar or nuclear power and imported hydrogen to produce methane and oxygen from Martian CO2. In other words, rocket fuel. This means that humans would set out only once they knew there would be a fuelled return vehicle waiting for them on Mars. The craft Mars Society president Robert Zubrin has a mission plan that, he believes, will be safer and cheaper than any other. It involves first launching an unmanned Earth Return Vehicle (ERV) that would land on Mars and use solar or nuclear power and imported hydrogen to produce methane and oxygen from Martian CO2. In other words, rocket fuel. This means that humans would set out only once they knew there would be a fuelled return vehicle waiting for them on Mars. The craft they fly out on, he says, would stay on Mars to provide future accommodation. A second ERV would be launched at the same time to provide back-up and, if all goes well, would be ready to bring the next team home two years later. In this way, a series of return trips would build up a number of living spaces on Mars for longer stays in the future. And because most of the fuel for the return trip would be made on Mars, Zubrin believes huge energy and cost savings could be made. Elon Musk NASA’s own plans are more cautious. They involve moving long-duration human missions out from the ISS to orbit the Moon over the next 13 years, while continuing the scientific exploration of Mars; followed up with cargo delivery and an unmanned sample-return mission in the late 2020s. But, they say, it won’t be before the early 2030s that humans orbit Mars, let alone land on the planet. Meanwhile, Elon Musk, former PayPal entrepreneur and founder of SpaceX, has his own plans. He already has a NASA contract for delivering supplies to the ISS and hopes to be able to deliver cargo to Mars in 2018, in preparation for a human mission in the 2020s. ‘Mars is something we can do in our lifetimes,’ he says.

#### Privatization of space also creates economic benefits for the ability to source resources from space—exactly what is needed for a human mission to Mars

Crawford 16-- Crawford, I. A. (2016); Department of Earth and Planetary Sciences, Birkbeck College, University of London, London, United Kingdom; The long-term scientific benefits of a space economy. Space Policy, 37, 58–61. doi:10.1016/j.spacepol.2016.07. (AG DebateDrills)

2.1. Economic benefits of using space resources in space to build, provision, and maintain scientific instruments and outposts It has long been recognized that future space exploration activities would benefit from utilising extraterrestrial resources wherever possible (an application known as In Situ Resource Utilisation, or ISRU), as this would avoid having to lift them out of Earth's gravity [4,7,10e12]. For example, scientific outposts on the Moon and Mars would benefit from using indigenous water resources (e.g. for drinking, personal hygiene, and as a source of both hydrogen and oxygen). Similarly, future space stations, satellites (including, in the present context, the next generation of large space telescopes), and space probes to the outer solar system would benefit if the hydrogen and oxygen needed for rocket fuel (as well as oxygen to breath if human crews are involved) could be sourced in space (e.g. from the lunar poles [8,13] or from hydrated asteroids [14,15]). For such applications, it is not the intrinsic value of the resources themselves that are scientifically enabling but the economic savings resulting from reduced launch masses from Earth. As Drmola and Mares [16] succinctly put the case for ISRU: “It is not the prospect of procuring something we covet here on the surface of the Earth that makes this venture attractive, but rather the idea of not having to wage an expensive battle with Earth's gravity each time we want to make use of something as mundane as water in space.” 2.2. Scientific discoveries made in the course of resource prospecting/extraction Companies engaged in prospecting for exploitable raw materials elsewhere in the solar system will inevitably rely on the knowledge and technical expertise of the planetary science community. However, by the same token, planetary science will learn much from this prospecting activity owing to improved access to a wider range solar system bodies (e.g. comets, asteroids, and lunar and planetary surfaces) than would otherwise occur (see the discussion summarised in Ref. [4]). This will greatly increase opportunities for making in situ measurements, and for returning a diverse range of samples to Earth for analysis, all of which will increase our understanding of the origin and evolution of the Solar System. There is a clear analogy here with the symbiotic relationship which exists between the geological sciences and the resource extraction industries on Earth e the latter needs the expertise of the former in order to locate economically exploitable resources, but the former also benefits from discoveries made, and techniques developed, by the latter. The same dynamic is sure to play out in space as the economic development of the solar system proceeds.

#### A human mission to Mars is key to inspiring a new generation of scientists and engineers

Ehlmann et al 05—Bethan Ehlmann [California Institute of Technology | CIT · Division of Geological and Planetary Sciences]; Humans to Mars: A feasibility and cost-benefit analysis; May 2005 Acta Astronautica 56(9-12):851-8; 10.1016/j.actaastro.2005.01.010. (AG DebateDrills)

Educating and inspiring America’s youth has long been a priority of NASA. Hence, we investigate the likely effects of a human mission to Mars on education in the United States. The Bureau of Labor predicts a 20% employment increase in engineering and a 15% increase in the physical sciences in the next 10 years, but as the Hart–Rudman Commission report states simply, the “US need for the highest quality human capital in science, mathematics, and engineering is not being met” [10]. In physics and advanced mathematics, American seniors score significantly below the international average on tests. While this is usually attributed to problems within the schools themselves, a general disinterest in math and science also contributes to American high school students’ poor performance. The trend continues at the undergraduate level. Comparing degrees granted between 1975 and 1999, the United States has a poor percentage increase compared to other nations. This decline is also reflected in the downward trend of the US relative to other nations in science and engineering degrees granted per capita to 24-year-olds [10]. At the graduate level, it is apparent that the number of doctoral degrees in natural sciences and engineering attained in Europe and Asia has increased rapidly compared to that of the United States. In 1975, the US granted approximately13,000 science and engineering doctoral degrees compared to Europe’s 7,000 and Asia’ 4500. In 1999, the US granted approximately18,000 science and engineering Ph.D.s while Europe granted 23,000 and Asia 19,000 [10]. Additionally, within US universities, 25% of graduate students in the sciences and nearly 40% of the graduate students in engineering, mathematics, and computer science are foreign born [10]. Based on this data, we see that decreasing production of scientists and engineers is not a global trend, but an area of particular concern for policy-makers in the United States. Some argue that money put into the space program could be better spent by putting it directly into the educational system to encourage students in the sciences and engineering. This is an unfortunate misconception. The United States is already one of the top spenders per student in the world [10]. Although more funding could always be useful to the American educational system, it does not promise the sustained effort needed to increase the number of Americans pursuing advanced degrees in science or engineering. The government cannot simply buy more computers, fund more scholarships, and lower teacher-to-student ratios enough to convince an 18-year-old freshman to invest at least 8 years in the pursuit of a science and engineering advanced degree. Students need something to inspire their efforts. The idea of space exploration significantly influencing youth is not without precedent. During the Apollo era of the 1960s, there was a dramatic increase in the number of American students pursuing advanced degrees in science, math, and engineering shortly after President Kennedy’s initiation of the Apollo program (Fig. 1). Furthermore, after the Apollo program was dismantled and NASA’s funding cut, the number of students going into these fields decreased with a down-ward trend of NASA’s budget. The figure is only a correlation; numerous other significant historical events, including the Vietnam War, also occurred at this time. However, anecdotal accounts of science and engineering professionals entering their disciplines inspired by the Apollo program “To the Moon” goal indicate how NASA can inspire a generation. Indeed, “To inspire the next generation of human explorers” [11] is the most compelling reason for the US policy-makers to support a human mission to Mars. The United States counts on advanced technology for economic stability and national security, which in turn depends on the ability of American universities to supply the science and engineering workforce. As the technological demands of the American lifestyle steadily increase, inspiration of the next generation of scientists and engineers becomes critical. A human mission to Mars has the unique ability to invigorate future scientists and engineers and create a program that operates in tandem with existing educational programs, adding an inspirational vision to supplement the efforts of teachers.

#### Scientific and engineering education key to preventing Climate Change – providing students facts, skills, and motivation to take action.

Dyster 13--Adam Dyster is a National Organizer for @serauk, Labour's Environment Campaign,Climate Home, 2013 (“Education is the key to addressing climate change, September 7, 2013, http://www.climatechangenews.com/2013/07/09/comment-education-is-the-key-to-addressing-climate-change/,Accessed 6-26-2017, AIN)

Education is vitally important for several, key reasons. It can deliver the scientific facts about the biggest issue facing young people, something that is being felt by millions worldwide. It equips youth with the skills to help combat climate change, and be part of a green recovering, and positive future. It also encourages young people to be involved as global citizens, and involves and engages them in an issue that’s impacts will be felt most keenly by those now going through the education system. We have a responsibility to educate, not only bound by international convention, but by moral and ethical duties. Schools must educate young people about the world around them, so that they are informed with facts and key issues. Education should keep up to date with science and academic thought. Just as the facts and science of stem cell research or alcohol abuse are taught, because of their relevance and strong scientific foundations, so should climate change and sustainability – indeed, even more so, given the magnitude and impact of environmental issues. Facts not fiction Such education must be about facts and science, not treated as the political football as it so often is. Such politicisation mires the issue, and means that the urgency and relevancy of climate change education is often lost amidst political point scoring. This should, as with other relevant science-based issues, be an area of consensus, not party political manoeuvring. Beyond establishing the facts of the issue, education can have be a great force for good, preparing young people to face, and indeed improve, the world after education has long been completed. How can we expect creative solutions and innovation to combat climate and sustainability issues if we don’t educate the next generation about them? The UK campaign against the removal of climate change from the Geography curriculum is itself proof of the power of education. Esha Marwaha, at 15-years-old, was able to write so eloquently on the dangers of removing climate change that her petition gained over 30,000 signatures in a matter of weeks. Yet without education, would we get another Esha, or another generation of activists, or even another generation who care about climate change. Without education, those who want or who’re able to combat climate change will surely be in the minority. New jobs This is especially relevant with the need for innovation and sustainable development. Currently the green economy is nascent, its burgeoning growth providing employment and a viable alternative to resource hungry industries and economic models. But positive growth needs new generations who both understand the need for alternative development and have the passion and desire to act. Education has a key role in showing young people that not only do they have wider responsibilities, but also that they are entitled to involvement in decisions. Climate change and sustainability are issues that cut across generations, and the decisions that are made today will have impact not upon the generation that makes them, but generations to come.1 Education can help give young people the tools to take part in these decisions, allowing them to enter into the debate. UN agreements Finally, there is a legal obligation for many countries to educate about climate change. Under Article 6 of the UN’s Framework Convention on Climate Change, signatories are obliged to: ‘Promote and facilitate …the development and implementation of educational and public awareness programmes on climate change and its effects’. This article is clear and direct, and must not be ignored. However in many respects this legal obligation is a lesser consideration when compared to the moral obligation each generation has to educate the next about climate change. Education is the most powerful tool and can engage young people in the debate, prepare them for working with the green economy, and give the definitive science and facts about the biggest issue facing young people. To quote H.G. Wells: “Human history becomes more and more a race between education and catastrophe.”

#### The impact is extinction—only quickly finding solutions prevents us from reaching tipping points

Sears 21-- Sears, Nathan Alexander. "Great Powers, Polarity, and Existential Threats to Humanity: An Analysis of the Dis-tribution of the Forces of Total Destruction in International Security." (2021).

Thus, the assumption here is that a Hothouse Earth climate could pose an existential threat to the habitability of the planet for humanity (Steffen et al. 2018., 5). At what point could climate change cross the threshold of an existential threat to humankind? The complexity of Earth’s natural systems makes it extremely difficult to give a precise figure (Rockstrom et al. 2009; ). However, much of the concern about climate change is over the danger of crossing “tipping points,” whereby positive feedback loops in Earth’s climate system could lead to potentially irreversible and self-reinforcing “runaway” climate change. For example, the melting of Arctic “permafrost” could produce additional warming, as glacial retreat reduces the refractory effect of the ice and releases huge quantities of methane currently trapped beneath it. A recent study suggests that a “planetary threshold” could exist at global average temperature of 2°C above preindustrial levels (Steffen et al. 2018; also IPCC 2018). Therefore, the analysis here takes the 2°C rise in global average temperatures as representing the lower-boundary of an existential threat to humanity, with higher temperatures increasing the risk of runaway climate change leading to a Hothouse Earth. The Paris Agreement on Climate Change set the goal of limiting the increase in global average temperatures to “well below” 2°C and to pursue efforts to limit the increase to 1.5°C. If the Paris Agreement goals are met, then nations would likely keep climate change below the threshold of an existential threat to humanity. According to Climate Action Tracker (2020), however, current policies of states are expected to produce global average temperatures of 2.9°C above preindustrial levels by 2100 (range between +2.1 and +3.9°C), while if states succeed in meeting their pledges and targets, global average temperatures are still projected to increase by 2.6°C (range between +2.1 and +3.3°C). Thus, while the Paris Agreements sets a goal that would reduce the exis 6 - tential risk of climate change, the actual policies of states could easily cross the threshold that would constitute an existential threat to humanity (CAT 2020). How do the CO2 emissions of the leading states affect the existential risk of climate change? One way to measure this would be to compare the leading states’ CO2 emissions against the global “carbon budget”—or the amount of CO2 emissions over a period of time that would keep global average temperature below the existential threshold of +2.0°C above preindustrial levels (IPCC 2018). If any of the leading state’s CO2 emissions—existing or projected—are equal to the global carbon budget, then this would constitute an absolute existential threat capability. None of the leading states appear to possess such an absolute existential threat capability. For example, the benchmark of total global annual CO2 equivalent emissions for a +2.0°C “compatible pathway” are 46 billion tonnes (bt) in 2025 and 38bt in 2030 (CAT 2020). China’s CO2 emissions are by far the largest amongst the leading states, which amounted to 10.17bt in 2019 and are expected to climb to somewhere below 15bt in the period between 2025 and 2030. China’s emissions are therefore far below the global carbon budget. Similarly, one 2019 study by the International Energy Agency estimated a remaining global carbon budget of 880 billion tonnes for having a 66% change of remaining well below 2.0°C (or 1.8°C) (Dalman 2020). Assuming China’s CO2 emissions were to remain on average at their current levels of approximately 10bt per year over the next 40 years until reaching China’s goal of “carbon neutrality” by 2060, China’s total emissions would still account for less than half of the global carbon budget. It is therefore highly unlikely that any 7 one of the leading states meets the threshold of CO2 emissions that would constitute an absolute existential threat capability, since no single state realistically accounts for the entire global carbon budget.

### World Improving

#### Free market capitalism has drastically improved the world.

Empirical education in child mortality and increase in life expectancy, development of tech innovation in the private market k2 medical advances, food production increased with agriculture tech green revolution, also decreased armed conflicts

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In How Much Have Global Problems Cost the World? Lomborg and a group of economists conclude that, with a few exceptions, the world is richer, freer, healthier, and smarter than it’s ever been. These gains have coincided with the near-universal rejection of statism and the flourishing of capitalist principles. At a time when political figures such as New York City mayor Bill de Blasio and religious leaders such as Pope Francis frequently remind us about the evils of unfettered capitalism, this is a worthwhile message. The doubling of human life expectancy is one of the most remarkable achievements of the past century. Consider, Lomborg writes, that “the twentieth century saw life expectancy rise by about 3 months for every calendar year.” The average child in 1900 could expect to live to just 32 years old; now that same child should make it to 70. This increase came during a century when worldwide economic output, driven by the spread of capitalism and freedom, grew by more than 4,000 percent. These gains occurred in developed and developing countries alike; among men and women; and even in a sense among children, as child mortality plummeted. Why are we living so much longer? Massive improvements in public health certainly played an important role. The World Health Organization’s global vaccination efforts essentially eradicated smallpox. But this would have been impossible without the innovative methods of vaccine preservation developed in the private sector by British scientist Leslie Collier. Oral rehydration therapies and antibiotics have also been instrumental in reducing child mortality. Simply put, technological progress is the key to these gains—and market economies have liberated, and rewarded, technological innovation. People are not just living longer, but better—sometimes with government’s help, and sometimes despite it. Even people in the developing countries of Africa and Latin America are better educated and better fed than ever before. Hundreds of thousands of children who would have died during previous eras due to malnutrition are alive today. Here, we can thank massive advancements in agricultural production unleashed by the free market. In the 1960s, privately funded agricultural researchers bred new, high-yield strains of corn, wheat, and various other crops thanks to advances in molecular genetics. Globalization helped spread these technologies to developing countries, which used them not only to feed their people, but also to become export powerhouses. This so-called “green revolution” reinforced both the educational progress (properly nourished children tend to learn more) and the life-expectancy gains (better nutrition leads to better health) of the twentieth century. These children live in a world with fewer armed conflicts, netting what the authors call a “peace dividend.” Globalization and trade liberalization have surely contributed to this more peaceful world (on aggregate). An interdependent global economy makes war costly. Of course, problems remain. As Lomborg points out, most foreign aid likely does little to boost economic welfare, yet hundreds of billions of dollars in “development assistance” continue to flow every year from developed countries to the developing world. Moreover, climate change is widely projected to intensify in the second half of the twenty-first century, and will carry with it a significant economic cost. But those familiar with the prior work of the “skeptical environmentalist” understand that ameliorating these effects over time could prove wasteful. Lomborg notes that the latest research on climate change estimates a net cost of 0.2 to 2 percent of GDP from 2055 to 2080. The same report points out that in 2030, mitigation costs may be as high as 4 percent of GDP. Perhaps directing mitigation funding to other priorities—curing AIDS for instance—would be a better use of the resources. Lomborg’s main message? Ignore those pining for the “good old days.” Thanks to the immense gains of the past century, there has never been a better time to be alive.

#### We turn poverty.

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Critics frequently accuse markets and capitalism of making life worse for the poor. This refrain is certainly common in the halls of left-leaning academia as well as in broader intellectual circles. But like so many other criticisms of capitalism, this one ignores the very real, and very available, facts of history. Nothing has done more to lift humanity out of poverty than the market economy. This claim is true whether we are looking at a time span of decades or of centuries. The number of people worldwide living on less than about two dollars per day today is less than half of what it was in 1990. The biggest gains in the fight against poverty have occurred in countries that have opened up their markets, such as China and India. If we look over the longer historical period, we can see that the trends today are just the continuation of capitalism’s victories in beating back poverty. For most of human history, we lived in a world of a few haves and lots of have-nots. That slowly began to change with the advent of capitalism and the Industrial Revolution. As economic growth took off and spread throughout the population, it created our own world in the West in which there are a whole bunch of haves and a few have-more-and-betters. For example, the percentage of American households below the poverty line who have basic appliances has grown steadily over the last few decades, with poor families in 2005 being more likely to own things like a clothes dryer, dishwasher, refrigerator, or air conditioner than the average household was in 1971. And consumer items that didn’t even exist back then, such as cell phones, were owned by half of poor households in 2005 and are owned by a substantial majority of them today. Capitalism has also made poor people’s lives far better by reducing infant and child mortality rates, not to mention maternal death rates during childbirth, and by extending life expectancies by decades. Consider, too, the way capitalism’s engine of growth has enabled the planet to sustain almost 7 billion people, compared to 1 billion in 1800. As Deirdre McCloskey has noted, if you multiply the gains in consumption to the average human by the gain in life expectancy worldwide by 7 (for 7 billion as compared to 1 billion people), humanity as a whole is better off by a factor of around 120. That’s not 120 percent better off, but 120 times better off since 1800. The competitive market process has also made education, art, and culture available to more and more people. Even the poorest of Americans, not to mention many of the global poor, have access through the Internet and TV to concerts, books, and works of art that were exclusively the province of the wealthy for centuries. And in the wealthiest countries, the dynamics of capitalism have begun to change the very nature of work. Where once humans toiled for 14 hours per day at backbreaking outdoor labor, now an increasing number of us work inside in climate-controlled comfort. Our workday and workweek have shrunk thanks to the much higher value of labor that comes from working with productive capital. We spend a much smaller percentage of our lives working for pay, whether we’re rich or poor. And even with economic change, the incomes of the poor are much less variable, as they are not linked to the unpredictable changes in weather that are part and parcel of a predominantly agricultural economy long since disappeared. Think of it this way: the fabulously wealthy kings of old had servants attending to their every need, but an impacted tooth would likely kill them. The poor in largely capitalist countries have access to a quality of medical care and a variety and quality of food that the ancient kings could only dream of. Consider, too, that the working poor of London 100 years ago were, at best, able to split a pound of meat per week among all of their children, which were greater in number than the two or three of today. In addition, the whole family ate meat once a week on Sunday, the one day the man of the household was home for dinner. That was meat for a week. Compare that to today, when we worry that poor Americans are too easily able to afford a meal with a quarter pound of meat in it every single day for less than an hour’s labor. Even if you think that capitalism has made poor people overweight, that’s a major accomplishment compared to the precapitalist norm of constant malnutrition and the struggle even 100 years ago for the working poor to get enough calories. The reality is that the rich have always lived well historically, as for centuries they could commandeer human labor to attend to their every need. In a precapitalist world, the poor had no hope of upward mobility or of relief from the endless physical drudgery that barely kept them alive. Today, the poor in capitalist countries live like kings, thanks mostly to the freeing of labor and the ability to accumulate capital that makes that labor more productive and enriches even the poorest. The falling cost of what were once luxuries and are now necessities, driven by the competitive market and its profit and loss signals, has brought labor-saving machines to the masses. When profit-seeking and innovation became acceptable behavior for the bourgeoisie, the horn of plenty brought forth its bounty, and even the poorest shared in that wealth. Once people no longer needed permission to innovate, and once the value of new inventions was judged by the improvements they made to the lives of the masses in the form of profit and loss, the poor began to live lives of comfort and dignity.