# 1NC R7 Harvard

## 1

#### Interp: Debaters must have recordings of their speeches and send them if requested

#### Violation: They didn't record, that was cx

#### A] Cheating – debaters can fake internet drop offs and then steal prep which decks reciprocity. O/Ws since it destroys competitive incentives and educational value since they are structurally ahead

#### B] Accidents possible, external conditions like power going out, wifi dropping off, or excessive background noise make it impossible to hear in real time, recordings ensure that a speech isn’t given twice, which allows them to remodify and change their strat or incite judge intervention which is the worst violation of procedural fairness

#### C] Key to check clipping cards and make cheaters lose with literal proof

#### No regress, its disclosed on my wiki

#### D] Novice accessibility – send recordings to novices to learn technical debate, that outweighs, accessibility is an impact filter to all arguments

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## 2

#### **Interp: Debaters must not defend the hypothetical implementation of an explicit actor or action**

#### Resolved in LD means statement of values

UPitt ND University Of Pittsburgh Communications Services Webteam, copyright 2015-21, "Basic Definitions," Department of Communication , <https://www.comm.pitt.edu/basic-definitions> CHO

Affirmative/Pro. The side that “affirms” the resolution (is “pro” the issue). For example, the affirmative side in a debate using the resolution of policy, Resolved: The United States federal government should implement a poverty reduction program for its citizens, would advocate for federal government implementation of a poverty reduction program. Argument. A statement, or claim, followed by a justification, or warrant. Justifications are responses to challenges, often linked by the word “because.” Example: The sun helps people, because the sun activates photosynthesis in plants, which produce oxygen so people can breathe. Constructive Speech. The first speeches in a debate, where the debaters “construct” their cases by presenting initial positions and arguments. Cross-examination. Question and answer sessions between debaters. Debate. A deliberative exercise characterized by formal procedures of argumentation, involving a set resolution to be debated, distinct times for debaters to speak, and a regulated order of speeches given. Evidence. Supporting materials for arguments. Standards for evidence are field-specific. Evidence can range from personal testimony, statistical evidence, research findings, to other published sources. Quotations drawn from journals, books, newspapers, and other audio-visuals sources are rather common. Negative/Con. The side that “negates” the resolution (is “con” the issue). For example, the negative side in a debate using the resolution of fact, Resolved: Global warming threatens agricultural production, would argue that global warming does not threaten agricultural production. Preparation Time. Debates often necessitate time between speeches for students to gather their thoughts and consider their opponent's arguments. This preparation is generally a set period of time and can be used at any time by either side at the conclusion of a speech. Rebuttal Speech. The last speeches in a debate, where debaters summarize arguments and draw conclusions about the debate. Resolution. A specific statement or question up for debate. Resolutions usually appear as statements of policy, fact or value. Statement of policy. Involves an actor (local, national, or global) with power to decide a course of action. For example, Resolved: The United States federal government should implement a poverty reduction program for its citizens. Statement of fact. Involves a dispute about empirical phenomenon. For example, Resolved: Global warming threatens agricultural production. Statement of value. Involves conflicting moral dilemmas. For example, Resolved: The death penalty is a justified method of punishment. Topic. A general issue to debate. Topics could be “The Civil War,” “genetic engineering,” or “Great Books.”

#### Is means is Definition of is (Entry 1 of 4) present tense third-person singular of BE **dialectal present tense** first-person and third-person singular **of BE** dialectal present tense plural of BE

Webster ND Definition of IS," Merriam Webster, <https://www.merriam-webster.com/dictionary/is> IS

#### Dialectical present tense means logical coherence which implies no implementation

Your Dictionary ND, "Dialectical Meaning," No Publication, <https://www.yourdictionary.com/dialectical> Cho

The definition of dialectical is a discussion that includes logical reasoning and dialogue, or something having the sounds, vocabulary and grammar of a specific way of speaking. An example of something dialectical is a Lincoln Douglass style of debate, where both parties argue a point in a logical order. Of, or pertaining to dialectic; logically reasoned through the exchange of opposing ideas.

#### “BE” is a linking verb, not an action verb so implementation is incoherent

Grammar Monster ND "Linking Verbs," Grammar Monster, <https://www.grammar-monster.com/glossary/linking_verbs.htm> CHO

What Are Linking Verbs? (with Examples) A linking verb is used to re-identify or to describe its subject. A linking verb is called a linking verb because it links the subject to a subject complement (see graphic below). Infographic Explaining Linking Verb A linking verb tells us what the subject is, not what the subject is doing. Easy Examples of Linking Verbs In each example, the linking verb is highlighted and the subject is bold. Alan is a vampire. (Here, the subject is re-identified as a vampire.) Alan is thirsty. (Here, the subject is described as thirsty.)

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#### Unjust means unjust adjective US /ʌnˈdʒʌst/ **not morally right; not fair**: New laws will protect employees against unjust dismissals. (Definition of unjust from the Cambridge Academic Content Dictionary © Cambridge University Press)

That’s Cambridge Dictionary ND [“Meaning of unjust in English” Cambridge Dictionary, [https://dictionary.cambridge.org/us/dictionary/english/unjust]](https://dictionary.cambridge.org/us/dictionary/english/unjust%5d)

#### Violation: They defend “\_\_\_\_\_\_\_” as the actor and implement an \_\_\_\_\_\_ which isn’t resolutional OR they are extra T

#### 1] Limits and Ground - justifies infinite unpredictable aff advantage ground and extra topical enforcement mechanisms which wreck research burdens while spiking core generics.

#### 2] Precision – the counter-interp justifies them arbitrarily doing away with random words in the resolution which decks ground and prep because the aff is no longer bounded by the resolution. Independent voter for jurisdiction – the judge doesn’t have the jurisdiction to vote aff if there wasn’t a legitimate aff.

#### 3] Clash - the resolution serves as a predictable stasis point to enhance accessible research and equitable ground, removing that makes negative preparation impossible since any ground we receive is self-serving and concessionary, ---the impact is resolutional clash. Generics don’t check since affs use their advocacy and enforcement to get a competitive edge

#### 4] Phil Ed – creates better ethical subjectivity and critical thinking that o/ws on uniqueness to LD, switch to policy and LARP on the water topic – solves all your offense

#### TVA: Read a phil aff that affirms that private appropriation is unjust with a kant FW and don’t defend implementation

#### Not specifying the actor/states of the aff is a voting issue - decimates core neg ground and nuanced method debates - Cross X is too late for the 1NC strat

## 3

#### Interp: The affirmative debaters must send a finalized version of the affirmative 15 minutes before round if requested and they are adding changes to the affirmative

#### Violation – No document sent

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#### A~ Pre round prep- Hiding changes mean that pre round neg prep was skewed—4 minutes of prep is not enough to put together a coherent 1nc or update our answers to the aff

#### B~ academic integrity – disclosing changes is key to ensure that new evidence isn't miscut and we have an idea of what analytics will look like

## 4

#### **Interp – If debaters defend the categorical imperative, they must delineate which branch they endorse in explicit text in the 1AC**

#### Violation – they don’t

#### Three different formulations.

Massey No Date [David Massey (Indian Hills Community College). “Kantianism”. PHI 105: Introduction to Ethics. No Date. Accessed 8/2/21. <https://www.indianhills.edu/_myhills/courses/PHI105/documents/lu08_kantianism.pdf> //Xu]

The categorical imperative is the centerpiece of Kant’s ethical theory. The term categorical imperative, basically means “absolute command.” Kant is referring to, what he sees as, an exceptionless obligation to perform the action dictated by the categorical imperative. Perhaps the best way to understand the categorical imperative is to look at how Kant used it. It was his means for determining which action was the morally correct action in any given circumstance. According to Kant, there is only one categorical imperative, which he presents in three different formulations that we will explore in a moment. However, many ethicists believe that these three formulations are not the same but are really distinct from one another, and that they are all three needed to fully understand and apply Kant’s ethical theory. Categorical Imperative – Formulation #1: The Principle of the Law of Nature The first formulation of the categorical imperative is called the principle of the law of nature. It’s also known as the law of universalizability, because it argues that if an action is morally right, then it must apply consistently to everyone. We should act as if our actions will become a universal law of nature. In other words, if anyone else were to be in similar circumstances to ours, they would be required to act in exactly the same manner. For example, a Kantian borrows money from another person and promises to pay that money back. When deciding whether to keep his promise, the Kantian must consider whether his action could be universalized. His thinking might go something like this, “I could lie and break my promise. However, what would happen if everyone who borrows money, promising to repay it, later decides to lie and break their promise? Very quickly, promises would come to mean nothing. People wouldn’t trust one another, and would not be willing to loan money to each other. This would clearly not be good for society. Therefore, it is morally wrong to lie.” A critic could argue that Kant is actually expressing some form of consequentialism, because in order to determine whether an action should be universalized, he resorts to considering what the results of that action would be in such circumstances. Another thing to keep in mind is that the action is only being universalized for those in similar circumstances. The level of specificity applied to the universal law (or “maxim,” as Kant calls it) is determined by the individual. For example, the universal law or maxim, based on the above scenario, might say, “Everyone who borrows money, promising to repay it, should lie and break their promise to repay.” However, what if the individual and his family were homeless and starving, with no means to repay the loan. Then, the maxim might be adjusted to say, “Everyone who borrows money, promising to repay it, who later is unable to repay the money due to severe impoverishment, should lie and break their promise to repay.” Whether one agrees with this statement or not, it clearly places a limitation on the first form of the maxim by making it more specific. Only under specific circumstances is it morally acceptable to act in a certain manner. This can make it easier to universalize. Kant puts it this way: “Act as though the maxim of your action were by your will to become a universal law of nature.” Categorical Imperative – Formulation #2: The Principle of Ends The second formulation of the categorical imperative, called the principle of ends, states: “So act as to treat humanity, whether in your own person or in that of any other, in every case as an end and never as merely a means.” In short, it’s saying that we should always treat human beings, including ourselves, as if they are an end in and of themselves, and never only as means to an end. In other words, we should respect and value others, and not simply use or manipulate them to accomplish our own purposes. This formulation arises from Kant’s view that, due to their rational nature – or ability to reason – human beings have immense intrinsic value. People do not simply have instrumental value, but are valuable in and of themselves. As such, they are to be respected and not merely used. The word “merely” is important in understanding what this means. For example, you are using your professors as a means to gain knowledge, skills, and perhaps a degree. You’re using your professors for your own ends or purposes. Does that make what you are doing morally wrong? No, because you aren’t merely (or only) using your professors. You are also valuing your professors and treating them as ends in and of themselves, by paying tuition, which enables the college to pay your professors so that they can feed themselves and their families. Both parties benefit from the arrangement. On the other hand, if you deceive someone, manipulate them into giving you something, or otherwise use them without respect, then Kant would consider that to be morally wrong, as it violates the principle of ends. Categorical Imperative – Formulation #3: The Principle of Autonomy The third formulation of the categorical imperative is the principle of autonomy, which says we are not dependent upon others to tell us what is right and wrong, but that we are free and able to discover this for ourselves through the use of reason. We won’t spend as much time on this one, since it doesn’t as clearly assist us in the process of determining what is morally right or wrong. However, it’s important to note that, for Kant, the responsibility for discovering and performing the morally right action rests firmly with each individual. We are to use our ability to reason to help us apply the categorical imperative to moral questions, and make our own decisions, rather than relying on someone else to tell us what to do. For Kant, the excuse “I was only following orders,” does not excuse anyone from doing something morally wrong. Kant puts it this way: “So act that your will can regard itself at the same time as making universal law through its maxims.”

#### Violation: They don’t

#### Standards

#### 1] Shiftiness-They can shift out of my turns based on whatever theory of the good they operate under due to the nature of a vague standard. Especially true because the warrants for their standard could justify different versions of Kantianism coming first and I wouldn’t know until the 1ar which gives them access to multiple contingent standards. CX can’t resolve this impact and is independently bad because A] Not flowed B] skews 6 min of prep during the aff C] They can proactively lie and there’s no way to check D] debaters can be intentionally shady.

#### 2] Real World- Philosophers need to be as specific as possible when delineating their theory since there are so many nuances and contextual applications of philosophy that require us to understand the core differences within the philosophy. That outweighs since debate has no pedagogical value without portable application.

#### This spec shell isn’t regressive- it literally determines what framework the affirmative defends and how to link offense back to it

#### Education is a voter since it is the only portable and durable skill that influences our subject formation. Fairness is a voter since a] debate is a game, competition equity matters proven by desire for wins, b] is worthless without rules and equal access.

#### Drop the debater – a] deters future abuse through a loss and b] set better norms for debate since you are less likely to repeat a practice you can lose for

#### Competing interps – [a] reasonability is arbitrary and encourages judge intervention since there’s no clear model of debate, [b] it creates a race to the top where we create the best possible norms for debate through offense [c] offense defense paradigm is the best method for evaluation since you can compare benefits under both interps easier.

#### No RVIs –

#### [a] Baiting—they’ll bait the theory debate and prep it out—justifies infinite abuse since they’ll get away with unacceptable practices

#### [b] 1AR all-outs—they’ll collapse entirely to theory which crowds out substance and kills education.

#### [c] Chilling effect—people will be scared to read theory since they can lose off of it, so no one will check abuse.

#### [d] Norm-setting—I shouldn’t be forced to keep advocating for a bad norm if I realize it’s bad in the middle of the round.

#### [e] Flex—RVIs make theory uncondo so I always have to go for that route to the ballot, but both debaters should get multiple relevant layers and collapse options.

#### [f] Illogical—doesn’t make sense to win just for being fair.

#### 1NC theory first - 1] Abuse was self-inflicted- They started the chain of abuse and forced me down this strategy 2] Norming- We have more speeches to norm over whether it’s a good idea since the shell was read earlier. Norming

#### Neg abuse outweighs Aff abuse – 1] Infinite prep time before round to frontline 2] 2AR judge psychology and 1st and last speech 3] Infinite perms and uplayering in the 1AR.

## 4

#### Text – Private Appropriation of Outer Space except for Space Elevators is 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.”

#### Space Elevators would solve every Environmental problem – key to re-balance Earth’s ecosystem.

Hendrix 19 Glen Hendrix 5-13-2019 "The Environmental Advantages of a Space Elevator” <https://medium.com/predict/the-environmental-advantages-of-a-space-elevator-91a355e3d68c> (Environment and Tech Writer at Medium)//Elmer

Climate change is big. It’s bad. Don’t let anyone tell you otherwise. It’s going to be a rough few hundred, maybe few thousand, years for humanity. The short term view is not encouraging. The fossil fuel energy companies are going to fight tooth and claw to keep selling combustibles. The long term view is more optimistic. As the adverse affects of climate change begin to multiply and intensify, naysayers will be silenced, and social pressure will mandate change. Will it be enough soon enough? Hard to say. If mankind ever gets this CO2 problem under control, we will be looking at different ways to do business that protects the Earth in a more proactive manner, keeping the environment as ideal for life, all life, as possible. A space elevator may be the key technology for mankind to have it’s cake and eat it, too while the Earth’s climate rebalances. With a space elevator, all the nasty industrial processes that require a lot of energy and cause a lot of pollution could take place in orbit around the Earth. The end products of those orbital industries could then be more easily and cheaply transported to Earth via the space elevator. A space elevator could also preserve planetary resources. The materials needed for these myriad industrial processes may not even need to come from the surface of the planet. Most can be found in the asteroids or on the Moon. Need fuel? Load up an orbital tanker from a methane lake on Titan, one of the moons of Jupiter. Need water. Find an asteroid made of water and mine it. It is estimated half the water in the oceans came from a bombardment of water-bearing asteroids. Need metal? Nickel-iron asteroids are plentiful. Need energy? Build focusing mirrors for heat and solar panels for electricity. How does a space elevator work? Take a piece of string with a weight on one end. Pick the string up by the weightless end and spin around until the weight is straight out from your body. A ladybug makes an amazing landing on the string and starts walking out the string to the counterweight. You are the Earth, the string is the elevator cable or tether, the weight is the counterweight, and the ladybug is the car that goes up and down the cable. It’s not a perfect analogy, but it gives a good idea of what and where the major parts are. The counterweight would be about 60,000 to 90,000 miles up from the Earth’s surface. The center of mass of the whole thing should be at geosynchronous orbit, about 22,000 miles up. Now quit spinning and sit down because you’re gonna be dizzy. Currently, carbon nanotubes are in the running to be the material that can withstand the tremendous stresses of this application. Someone just has to figure out how to make a 60,000 mile long ribbon of the stuff with no imperfections. Meteoroids and space debris are a major problem. Protective measures must be implemented. A major clean-up of our space debris may be in order before we invest in such a mega-project as the space elevator. With the polluting industries moved to orbit, imagine the Earth as a giant natural park. Yes, we’ll live here, but not as obtrusively as before. One counterintuitive idea would be a further consolidation of humanity into supercities. Megalithic structures would house humanity. Supercities could eliminate untold millions of miles of transportation because everything and everyone is so much closer. Walking would be the preferred mode of transportation along with personal electric scooters and elevators. It would free up a lot of land for planting trees and other plants to sequester CO2. Meat would be grown or fabricated in a lab. Multistory greenhouses would grow our vegetables and grains. Supercities would be connected by high speed underground subways like Hyperloop. Other means of transportation will be electric drones and hybrid airships that can flip between heavier and lighter-than-air modes of flight. I know what you’re thinking. This is all such pie-in-the-sky fantasy stuff with no connection to reality. Fifty years ago, so was AI, GPS, autonomous vehicles, internet, and personal computers. The future looks bright. If we can just get there. Let us hope our immediate future holds in store political allies to humanity and the planet instead of what we have now.

#### Warming causes Extinction

Kareiva 18, Peter, and Valerie Carranza. "Existential risk due to ecosystem collapse: Nature strikes back." Futures 102 (2018): 39-50. (Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA)//Re-cut by Elmer

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

#### Space Elevators solve Space Debris

Forgan 19, Duncan H. Solving Fermi's Paradox. Vol. 10. Cambridge University Press, 2019. (Associate Lecturer at the Centre for Exoplanet Science at the University of St Andrews, Scotland, founding member of the UK Search for Extra-terrestrial Intelligence (SETI) research network and leads UK research efforts into the search)//Elmer

All objects in HEO reside beyond the geostationary orbit (GEO). The orbital period at GEO (w'hich is aligned with the Earth's equator) is equal to the Earth’s rotational period. As a result, from a ground observer’s perspective the satellite resides at a fixed point in the sky, with clear advantages for uses such as global communication. Activities at HEO are considerably less than at LEO and MEO. Earth's orbital environment does contain a natural component - the meteoroids. These pose little to no threat to space operations - the true threat is self-derived. The current limitations of spacefaring technology ensure that every launch is accompanied by substantial amounts of space debris. This debris ranges in size from dust grains to paint flecks to large derelict spacecraft and satellites. According to NASA’s Orbital Debris Program Office, some 21.000 objects greater than 10 cm in size are currently being tracked in LEO. with the population below 10 cm substantially higher. Most debris produced at launch tends to be deposited with no supplemental velocity - hence these objects tend to follow the initial launch trajectory, which often orbits with high eccentricity and inclination. However, these orbits do intersect with the orbits of Earth’s artificial satellite population, resulting in impacts w'hich tend to produce further debris. The vast majority of the low-size debris population is so-called fragmentation debris. This is produced during spacecraft deterioration, and in the most abun- dance during spacecraft break-up and impacts. The first satellite-satellite collision occurred in 1961. resulting in a 400% increase in fragmentation debris (Johnson et al.. 2008). Most notably, a substantial source of fragmentation debris was the deliberate destruction of the Fengyun 1C satellite by the People’s Republic of China, which created approximately 2.000 debris fragments. As with collisions of ‘natural debris’, debris-debris collisions tend to result in an increased count of debris fragments. Since the late 1970s, it has been understood that man-made debris could pose an existential risk to space operations. Kessler and Cour-Palais (1978) worked from the then-population of satellites to extrapolate the debris production rate over the next 30 years. Impact rates on spacecraft at any location. /, can be calculated if one knows the local density of debris p, the mean relative velocity vrei\* and the cross-sectional area ct: [[EQUATION 13.5 OMITTED]] Each impact increases p without substantially altering vrel or o. We should there- fore expect the impact rate (and hence the density of objects) to continue growing at an exponential rate: [[EQUATION 13.6 OMITTED]] Kessler and Cour-Palais (1978) predicted that by the year 2000, p would have increased beyond the critical value for generating a collisional cascade. As new collisions occur, these begin to increase ^jjp, which in turn increases resulting in a rapid positive feedback, with p and I reaching such large values that LEO is rendered completely unnavigable. This has not come to pass - LEO remains navigable, partially due to a slight overprediction of debris produced by individual launches. The spectre of a collisional cascade (often referred to as Kessler syndrome) still looms over human space exploration, as debris counts continue to rise. Without a corresponding dedicated effort to reduce these counts, either through mitigating strategies to reduce the production of debris during launches, or through removal of debris fragments from LEO. we cannot guarantee the protection of the current flotilla of satellites, leaving our highly satellite-dependent society at deep risk. What strategies can be deployed to remove space debris? Almost all debris removal techniques rely on using the Earth’s atmosphere as a waste disposal sys- tem. Most debris is sufficiently small that atmospheric entry would result in its complete destruction, with no appreciable polluting effects. Atmospheric entry requires the debris fragments to be decelerated so that their orbits begin to intersect with lower atmospheric altitudes. Once a critical altitude is reached, atmospheric drag is sufficiently strong that the debris undergoes runaway deceleration and ultimately destruction. There are multiple proposed techniques for decelerating debris. Some mechani- cal methods include capturing the debris using either a net or harpoon, and applying a modest level of reverse thrust. These are most effective for larger fragments, and especially intact satellites (Forshaw et al., 2015). Attaching sails to the debris is also a possibility if the orbit is sufficiently low for weak atmospheric drag. The Japanese space agency JAXA’s Kounotori Integrated Tether Experiment (KITE) will trail a long conductive cable. As a current is passed through the cable, and the cable traverses the Earth’s magnetic field, the cable experiences a magnetic drag force that will de-orbit the spacecraft. Orbiting and ground-based lasers can decelerate the debris through a variety of means. For small debris fragments, the radiation pressure produced by the laser can provide drag. A more powerful laser can act on larger debris fragments through ablation. As the laser ablates the debris, the resulting recoil generated by the escaping material produces drag and encourages de-orbit. A more lateral solution is to ensure that launches and general space-based activity no longer generate debris. These approaches advocate lower-energy launch mechanisms that do not rely on powerful combustion. The most famous is the space elevator (see Aravind. 2007). Originally conceived by Tsiolkovsky, the ele- vator consists of an extremely durable cable extended from a point near the Earth’s equator, up to an anchor point located at GEO (most conceptions of the anchor point envision an asteroid parked in GEO). ‘Climber’ cars can then be attached to the cable and lifted to LEO, MEO and even GEO by a variety of propulsion methods. Most notably, the cars can be driven to GEO without the need for chemical rockets or nuclear explosions - indeed, a great deal of energy can be saved by having coupled cars, one ascending and one descending. Space elevators would solve a great number of problems relating to entering (and leaving) Earth orbit, substantially reducing the cost of delivering payload out of the Earth's atmosphere. The technical challenges involved in deploying a cable tens of thousands of kilometres long are enormous, not to mention the material science required to produce a cable of sufficient tensile strength and flexibility in the first place. The gravitational force (and centrifugal force) felt by the cable will vary significantly along its length. As cars climb the cable, the Coriolis force will move the car (and cable) horizontally also, providing further strain on the cable material. The relatively slow traversal of the biologically hazardous Van Allen Belt on the route to GEO is also a potential concern for crewed space travel. Whatever the means, a spacefaring civilisation (or at least, a civilisation that utilises its local orbital environment as we do) must develop a non-polluting solution to space travel, whether that is via the construction of a space elevator, a maglev launch loop, rail gun, or some other form of non-rocket acceleration. If it cannot perform pollution-free spacecraft launches (or fully clean up its pollution), then it will eventually succumb to Kessler syndrome, with potentially drastic consequences for future space use, with likely civilisation-ending effects (Solution C.13).

## Case

### UV

### Kant Negates

#### Libertarianism 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.

### A2 Leon

#### 1] Space mining isn’t appropriation – its not permanent and OST consensus.

Hofmann and Bergamasco 19 [Mahulena Hofmann (SES Chair in Space, SatCom and Media Law at the University of Luxembourg) and Federico Bergamasco (PhD Researcher in aviation, telecommunication and space law University of Luxembourg). “Space resources activities from the perspective of sustainability: legal aspects”. Global Sustainability. 9 December 2019. Accessed 12/18/21. <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/DF153F4A77970AC9E12444EC2B001F8A/S2059479819000279a.pdf/div-class-title-space-resources-activities-from-the-perspective-of-sustainability-legal-aspects-div.pdf> //Xu]

However, the purpose of space mining activities is considered to be neither any ‘appropriation’ of parts of outer space nor of space resources in situ. Instead, the sole aim of any such activities is their extraction, use and commercialization, without any territorial demands or titles as to the celestial bodies (or parts thereof) concerned (Mizushima et al., 2017). The argument, which sees in the use or exploitation of a space mineral by one subject a limitation of the same right of another subject, is difficult to contest by other means than analogy with space exploration. As has been recognized by the drafters of the OST in its Articles IX and XII, a purely scientific project in one area of outer space could de facto prevent research at the same site by a subject from another State. To avoid such situations, the Treaty pre-envisages a system of international consultations aimed at avoiding any harmful interference with operations.

### A2 Westphal

### AT Van Ejik

### AT Shammas and Holen

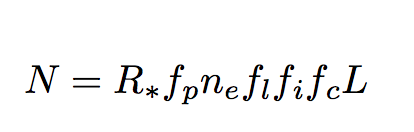
### AT Green

#### The newest study errs negative — the Drake Equation assumes the latest science and most likely scenarios

— we don’t endorse ableist language

Coren 18 — Michael J. Coren (covers technology, science, startups, and VC), 6-25-2018, “Where is Everybody — We may have answered the Fermi Paradox: We are alone in the universe,” <https://qz.com/1314111/we-may-have-answered-the-fermi-paradox-we-are-alone-in-the-universe/>, [accessed: 5/18/19] — JPark

Researchers of Oxford University’s Future of Humanity Institute have another answer. It’s likely intelligent life doesn’t exist at all, outside of Earth. In a paper submitted to the Proceedings of the Royal Society of London (it appeared online this month on the pre-publication site arXiv), the researchers write that there is “a substantial ex ante probability of there being no other intelligent life in our observable universe,” and we shouldn’t be surprised if we fail to detect any signs of it. In other words, there is no need to speculate about the fate of aliens. It’s likely they’ve never existed, they assert in the paper, titled “Dissolving the Fermi Paradox.” The Fermi Paradox derives from a question reportedly posed by physicist Enrico Fermi during a 1950 lunch in the Los Alamos National Laboratory in the state of New Mexico. According to Scientific American, a group of scientists were discussing a New Yorker cartoon showing aliens emerging a spaceship, onto the streets of New York City. ”Where is everyone?” Fermi asked. While he was likely questioning the possibility of interstellar travel, later accounts suggested he was casting doubt on the existence of extraterrestrials themselves, the magazine reports. Scientists have been trying to answer Fermi’s question ever since. Many of the most rigorous attempts have built on a postulation known as the Drake equation. There are plenty of unknowns, but the equation suggests it’s plausible thousands of detectable alien civilizations could be roaming the Milky Way based on the probability of seven factors. The equation:



N: total detectable alien civilizations in the Milky Way

R∗: rate of star formation per year

fp: fraction of stars with planets

ne: Earth-like (or otherwise habitable) planets per system with planets

fl: fraction of such planets with life

fi: fraction with life that develop intelligence

fc: fraction of intelligent civilizations that are detectable/contactable

L: average longevity of such detectable civilizations

Previous estimates of the Drake equation have assigned a single number to those variables. The recent study sought to make a more informed guess. It relies on our latest knowledge of biology, chemistry, and cosmology, and uses a distribution of probabilities (a range) to capture the most likely scenarios,

rather than assign a single value. When they did, the researchers found that the possibility we’re alone in the galaxy is far higher than presumed given the truly gargantuan number of possible home planets. The authors assert that the chance humanity stands alone among intelligent civilizations in our galaxy is 53%–99.6%, and across the observable universe is 39%–85%. Since the Fermi “paradox” exists only if we are confident alien civilizations are out there, this uncertainty suggests we may just be the lucky ones—thus, there is no such paradox. ”We should not actually be all that surprised to see an empty galaxy,” the authors write. But don’t give up entirely. The Drake equation, at best, merely gives us a way to formalize what is still unknowable. It’s a big universe.