# 1AC

### Plan

#### Plan: Starlink is unjust.

### Advantage

#### 420 billion advanced alien civilizations in universe – pessimistic

Lichfield, 2016 – quoting study by University of Rochester Astrophysics Professor

Gideon Lichfield, Quarters Senior Editor, MIT Technology Review Editor-in-chief, “There have probably been trillions of alien civilizations, and yet we may still never see one”, Published June 11, 2016, Last updated on June 13, 2016, <https://qz.com/704687/there-have-probably-been-trillions-of-alien-civilizations-and-yet-we-may-still-never-see-one/>, accessed 12/7/21, sb

\* Adam Frank is an astrophysics professor at the University of Rochester, a co-founder of NPR’s 13.7 Cosmos and Culture blog and the author of “About Time: Cosmology and Culture at the Twilight of the Big Bang.”

Sorry, everybody. We’re just not that special. In more than five decades of scanning the heavens, the search for extraterrestrial intelligence (SETI) has found no sign of alien life. Yet now two American astronomers, in the scientific equivalent of a back-of-the-envelope calculation, are estimating that over the course of its history the universe has seen at least half a trillion technologically advanced species. The paper in Astrobiology by Adam Frank and Woodruff Sullivan notes that, in just the last few years, we’ve gained a much clearer sense of how hospitable the universe is to life. NASA’s Kepler space telescope has identified thousands of planets in our neighborhood of the galaxy, along with their sizes and distances from their stars. From there it’s fairly easy to guess how many may hold liquid water, which is probably essential for complex life. In our Milky Way galaxy alone there are, by this estimate, some 60 billion such “habitable” planets, write Frank and Sullivan. The big remaining unknown is how many of these planets give rise to the kinds of lifeforms that build advanced technology (if nuclear weapons and Oculus Rifts can be called “advanced”). Since Earth is the only one we know of, the guesses vary wildly, but one such civilization per 10 billion habitable planets is generally considered “highly pessimistic,” wrote Frank in the New York Times yesterday (paywall). In astronomy-speak, this means the figure could be 10, 100 or even 1,000 times too low. Using that “pessimistic” proportion, and other numbers from Frank and Sullivan’s paper, I calculated how many alien civilizations should have emerged within various subregions of the universe during its history: Total advanced civilizations in the history of the universe\*

|  |  |  |
| --- | --- | --- |
|  | No. of galaxies | No. of civilizations |
| Milky Way | 1 | 6 |
| Local Group | 30 | 180 |
| Galactic cluster | 300 | 1,800 |
| Supercluster | 3,000 | 18,000 |
| Observable universe | 70,000,000,000 | 420,000,000,000 |

A Frank & WT Sullivan | \* assuming 1 in 10 bln civs/habitable planet

Remember, 420 billion intelligent civilizations is the “pessimistic” estimate. But sadly—or happily, depending on your view of aliens—it doesn’t make us any less alone. Though Frank and Sullivan wisely avoid putting a number on how many alien species are knocking around right now, we can do our own back-of-the-envelope reckoning. A crucial unknown factor is how long a technologically advanced civilization lasts before either going extinct or blasting itself back to the stone age. Judging by the past century of human history, even a thousand years might be optimistic. But let’s be really optimistic and call it a million years. That’s the average lifespan of a mammalian species that doesn’t invent the means of its own destruction. I’m also going to assume that, though the universe is 13.8 billion years old, advanced species didn’t begin to appear until a couple of billion years ago. It took most of the universe’s history to form the kinds of planets, rich in heavier elements, on which creatures like us could evolve. So if there have been 420 billion civilizations in the past 2 billion years, each one lasting a million years, then on average, about 210 million of them have existed simultaneously at any given moment. That may seem like a lot of aliens to talk to. But not in a cosmos as big as ours. The observable universe is an estimated 93 billion light years in diameter. If you sprinkle 210 million civilizations throughout it like raisins in a cake, they’ll be spaced about 125 million light years apart.\* Our own galaxy is only about 100,000 light years wide, so that’s a journey of 1,250 Milky Ways laid end to end before you come to the next intergalactic refueling stop. Even waving hello from a distance is pretty much out of the question, given that the furthest planets we can currently detect are just 25,000 light years away. (For what it’s worth, the SETI people have higher hopes.) Of course, this assumes civilizations are evenly distributed throughout space. In reality, the universe is clumpy, so they’ll be more concentrated in parts. And sheer random luck might have planted one within easy reach of us. Then again, that might be very bad luck indeed. Update: Seth Shostak, senior astronomer at the SETI Institute, has responded to this article saying that “many have guessed” that one in a million habitable worlds would produce advanced intelligence, rather than one in 10 billion. If so, and sticking to the other assumptions, there’d a good chance of at least one other civilization in our own galaxy existing at the same time as ours, meaning it would much closer, and thus more plausibly detectable.

#### Starlink is the Earth’s first techno-signature that makes humans Earth discoverable by advanced alien civilizations

Carter, 2021 – Forbes Senior Contributor

Jamie Carter, Senior Contributor at Forbes. Space, travel and tech journalist. “SpaceX’s Starlink Satellites Could Eventually Make Us Visible To Aliens Says Scientist”, Mar 18, 2021, 11:00pm EDT, <https://www.forbes.com/sites/jamiecartereurope/2021/03/18/spacexs-starlink-satellites-could-eventually-make-us-visible-to-aliens-says-scientist/?sh=4cbe7cea7b44>, accessed 12/2/21, sb

We are invisible. If there are advanced alien civilizations out there on distant planets looking at Earth through telescopes, they don’t know we’re here. Aside from a trace of wholly artificial CFC gases in our atmosphere, there’s so very little observable evidence that humans exist, or ever existed, on this planet, if it was viewed through a telescope from afar. Is SpaceX changing that with its ever-increasing “mega-constellation” of Starlink satellites? Yes it is—but it will take about 800 years before Starlink makes Earth visible to any distant alien telescopes trained on Earth That’s according to the author behind a new paper accepted for publication in the Journal of the British Interplanetary Society that’s inspired by the realization that Starlink is one of our civilization’s first megaconstructions that takes us closer to having our first “techno-signature.” What is SpaceX Starlink? Elon Musk’s company is launching batch after batch of its Starlink satellites into orbit in an effort to build a global high-speed broadband internet network. A pre-dawn launch of its Falcon 9 rocket on Sunday, Match 14, 2021 saw yet another 60 Starlink satellites go into orbit from NASA’s Kennedy Space Center in Florida. That makes a total of around a thousand Starlink satellites so far, with SpaceX planning on launching as many as 12,000 by 2030 and a possibly as many as 40,000 in the longer term. Those in areas of the globe currently without fast internet access—about half of humanity—may be able to get online via Starlink (or its upcoming competitors like Amazon’s Project Kuiper), but there are concerns about increasing space junk and their negative impact on critical astronomical observations. SpaceX Starlink as our first ‘techno-signature’ What’s not been discussed before is that with Starlink—and other upcoming mega-constellations of satellites—Earth could gradually be getting its first “techno-signature” visible from deep space. A “techno-signature” is evidence for the use of technology or industrial activity in other parts of the Universe. Detecting them with large telescopes is one way we could confirm the presence of advanced alien civilizations—or vice versa. In a paper published online by Zaza Osmanov, a professor in astrophysics at the Free University of Tbilisi, Georgia, it’s estimated that the Very Large Telescope (VLT) in Chile and China’s FAST radio telescope —if in deep space—could eventually find Starlink. Osmanov reckons that in 1,000 years our civilization could be showing-off itself to instruments like the Very Large Telescope on planets up to 260 light-years away. Such instruments would be able to detect any megastructure around Earth in the infrared from that distance. However, for SpaceX’s Starlink constellation alone to show-up in any searches would take about 800 years. “One of the major factors is the time of observation of a telescope,” said Osmanov, who made his calculations based on Starlink satellites’ brightness and an observing time of an hour. “Though it also depends on geometry, for the same value one can roughly estimate that the number of satellites to make the construction visible from 100 light years should be of the order of 30 billion,” he added. That’s a lot of Falcon 9 launches. He also suggests that since Starlink satellites broadcast radio signals the FAST telescope would be able to detect them as far out as 520 light-years distant. Explained: the Kardashev scale Constructing a “megastructure” around Earth—a concept that recalls Dyson spheres or ring-like structures—would make us a “Type-1” civilization on the Kardashev scale, something we’ve not attained yet. It’s a measure of how technologically advanced a civilization is based on how much energy it’s able to use. Here’s the scale: A “planetary civilization” (type-1): can harness all the energy that falls on a planet from its parent star—something we haven’t achieved yet and probably won’t for about 1,000 years if our energy use increases at 1% per year, according to the paper. We’re currently rated as a “type 0.7” civilization. A “stellar civilization” (type-2): can harness all the energy produced by its parent star—possibly via a Dyson sphere. A “galactic civilization” (type-3): can harness the total energy in the Milky Way. The massive structures required for “stellar” and “galactic” civilizations could be easier to detect, of course, because they would give-off intense radiation visible in the infrared. What Osmanov’s paper ponders is whether anything we—an aspiring “planetary” civilization—could construct now (specifically Starlink) could be visible from “out there.” So with Starlink perhaps SpaceX is building Earth’s first planetary megastructures, but it’s going to take an awful long time before we humans get anywhere near having our own “techno-signature.”

#### Starlink is Earth’s first megastructure that has a techno-signature – allows for detection by more advanced Type 1-3 civilizations

Osmanov, 2021 – Free University of Tbilisi Physics Professor

Osmanov Z.N. Zaza Osmanov, Professor of Physics, Free University of Tbilisi. Associate Dean of School of Physics, Free University of Tbilisi. SETI Institute Research Affiliate. Education: PhD, University of Turin. School of Physics, Free University of Tbilisi, 0183, Tbilisi, Georgia E. Kharadze Georgian National Astrophysical Observatory, Abastumani, 0301, Georgia, “From the SpaceX Starlink megaconstellation to the search for Type-I civilizations”, 12 Mar 2021, <https://arxiv.org/pdf/2103.07227.pdf>, accessed 12/7/21, sb

Here we extrapolate the idea of launching SpaceX’s Starlink satellites and study the possibility of building planetary megastructures (either designed as solid objects or as a web of satellites) by Type-I civilizations and the consequent detection of their techno-signatures. We have shown that the instruments of The Very Large Telescope Interferometer (VLTI) can potentially observe emission pattern of the huge constructions. Efficiency of the spectral variability method has been emphasized and the role of the FAST telescope was discussed.

Subject headings: SpaceX Starlink; SETI; Techno-signatures; Extraterrestrial life; FAST telescope

1. Introduction Last year on May 24 the SpaceX launched the first set of 60 Starlink satellites and up to now the total number is approximately 400 aiming to reach at least 12000 (McDowell 2020) at the end of a decade program announced by Elon Musk. Such a huge number of satellites, distributed over almost the whole surface of the Earth might be considered as the first prototype of a possible megastructure around the Earth, which in principal, might be visible from the cosmos. Similarly, one may search for techno-signatures of alien civilizations.

The discovery of the Tabby’s star (Boyajian et al. 2016) and ”Oumuamua” (Bialy & Loeb 2018) have provoked the revival of the search for extraterrestrial intelligence (SETI). The idea to search for techno-signatures of advanced alien societies have been proposed by Dyson (1960). Assuming that a civilization is advanced enough to build a megastructure around a host star to consume its whole energy, Dyson has concluded that such a huge (having the length-scale of the order of one AU) spherical construction - Dyson sphere (DS) - should be visible in the infrared (IR) spectrum. Civilizations harnessing the host star’s total energy belong to the Type-II societies according to the classification by Kardashev (1964). Type-I civilization is harnessing the total energy coming from the sun to the Earth. Our society is consuming less than the mentioned energy, therefore, an index, K = log10 (P) /10 − 0.6, introduced by Shklovskii & Sagan (1966) for Earthlings is 0.7, where P denotes the average harnessed power in Watts. In the framework of the same classification Type-III is the alien high tech society which is able to use the total energy of the host galaxy.

It is clear that detection of Type-II and TypeIII civilizations is much easier than Type-I because of the much higher total consumed energies. Therefore, a special interest in the Dysonian SETI projects deserve Type-II,III technosignatures and a series of papers are dedicated to identification of DS candidates (Timofeev et al. 2000; Carrigan 2009; Zackrisson et al. 2018). Dyson’s original idea has been extended to hot DSs (Osmanov & Berezhiani 2018, 2019) and the megastructures around pulsars (Osmanov 2016, 2017).

Despite high radiation intensity of TypeII,III technologies compared to Type-I technosignatures, the latter still can be considered seriously in the SETI context. In particular, Kuhn & Berdyugina (2015) studied effects of global warming as detectable biomarkers in Earthlike societies.

Our civilization consumes approximately 1.5 × 1020 ergs s−1 (Kuhn & Berdyugina 2015), which is less than for Type-I society, 1.7 × 1024 ergs s−1 . If one assumes 1% of an average growth rate of industry and the subsequent energy consumption, one can straightforwardly show that our civilization might reach Type-I in ∼ 1000yrs. It is quite probable that in 1000yrs the level of technology will differ from ours, likewise ours is different from the one of middle ages. Therefore, one can assume that Type-I alien society is able to cloak their planet by a sphere-like (or ring-like) structure to harness the total energy emitted from their host star toward the planet.

In this paper we consider the possible observational characteristics of a planetary megastructure partially or completely covering an Earth-like planet located in the habitable zone.

The paper is organized in the following way: in Sec. 2, we introduce main theory and study the techno-signatures of Type-I megaconstructions, obtaining major results and in Sec. 3 we outline them.

#### Alien civilizations haven’t found us yet, but they’re more advanced and an existential risk to humanity – we shouldn’t attempt to make ourselves known

Buchanan, 2021

Mark Buchanan is a physicist and science writer based in Europe. “Contacting aliens could end all life on earth. Let’s stop trying.”, June 10, 2021 at 10:00 a.m. UTC, <https://www.washingtonpost.com/outlook/ufo-report-aliens-seti/2021/06/09/1402f6a8-c899-11eb-81b1-34796c7393af_story.html>, accessed 12/2/21, sb

In April 2020, the Defense Department released videos recorded by infrared cameras on U.S. Navy aircraft that documented the planes’ encounters with a variety of “unidentified aerial phenomena.” Pilots reported seeing objects flying across the sky at hypersonic speeds and changing direction almost instantaneously, capabilities far beyond that of any known aircraft. What were the pilots seeing? Bizarre atmospheric phenomena? Alien spacecraft? Something else? Several branches of the government have been investigating the events, motivated in part by concern that adversaries such as Russia or China might have made some spectacular technological advance, and later this month, the government plans to publish a report revealing what they know. Reportedly, the government will say there’s no proof of extraterrestrial activity, but that the incidents remain unexplained. Chances are, though, that we should all be grateful that we don’t yet have any evidence of contact with alien civilizations. Attempting to communicate with extraterrestrials, if they do exist, could be extremely dangerous for us. We need to figure out whether it’s wise — or safe — and how to handle such attempts in an organized manner. Some scientific circles have already been debating questions around whether to try to contact other civilizations. It’s a topic of profound importance for the entire planet. For 60 years, scientists have been searching with radio telescopes, listening in for possible signals coming from other civilizations on planets orbiting distant stars. These efforts have largely been organized by the SETI institute in California — the acronym stands for Search for ExtraTerrestrial Intelligence — and so far, they’ve had no success. Getting impatient, some other scientists are now pushing for a more active program — METI, for Messaging ExtraTerrestrial Intelligence — that wouldn’t just listen, but actually send out powerful messages toward other stars, seeking to make contact. The search for aliens has reached a stage of technological sophistication and associated risk that it needs strict regulation at national and international levels. Without oversight, even one person — with access to powerful transmitting technology — could take actions affecting the future of the entire planet. That’s because any aliens we ultimately encounter will likely be far more technologically advanced than we are, for a simple reason: Most stars in our galaxy are much older than the sun. If civilizations arise fairly frequently on some planets, then there ought to be many civilizations in our galaxy millions of years more advanced than our own. Many of these would likely have taken significant steps to begin exploring and possibly colonizing the galaxy. Hence, it’s a profound mystery — known as the Fermi Paradox, after the Italian physicist Enrico Fermi — why we haven’t yet seen any such aliens. Many resolutions of the paradox have been proposed, among them the suggestion that all civilizations, once reaching sufficient technological capacity, eventually destroy themselves. Or perhaps aliens are so alien and unlike humans that we simply cannot interact with them. More alarming is the possibility that alien civilizations are remaining out of contact because they know something: that sending out signals is catastrophically risky. Our history on Earth has given us many examples of what can happen when civilizations with unequal technology meet — generally, the technologically more advanced has destroyed or enslaved the other. A cosmic version of this reality might have convinced many alien civilizations to remain silent. Exposing yourself is an invitation to be preyed upon and devoured. I’ve written about METI in the past, suggesting such activity takes a huge risk for very little gain. But these concerns don’t convince supporters of trying it, who have some counterarguments. Douglas Vakoch of METI International argues that it’s unrealistic to worry about the danger of an alien invasion. We have, after all, been sending radio and television emissions into space for a century, and a civilization far more advanced than our own will probably have already detected these. If they wanted to invade, they already would have. He also argues that, in assessing risks, it’s important not only to consider the risk coming from taking an action, but also from not taking that action. Our world faces a number of potentially existential threats, including global warming and destabilization of the environment, and it’s possible that far more advanced civilizations may have already faced these issues and found solutions. If we don’t send out signals, Vakosh writes, we risk “missing guidance that could enhance our own civilization’s sustainability.” It’s also conceivable, he suggests, that we’re making a spectacular misjudgment — and some super-advanced alien civilization may attack us precisely because we haven’t reached out. For obvious reasons, much of the thinking about these issues has to be rather speculative. The best way forward, perhaps, is to broaden the discussion. If all of humanity is exposed to the possible consequences trying to contact alien civilizations, then more people should be involved in making decisions about what is wise and what isn’t. It shouldn’t be left to a handful of radio astronomers. One vocal critic of the idea of reaching out to aliens proactively — astronomer John Gertz of SETI — has developed proposals to move toward more inclusive public consideration of these activities. What we need, he suggests, are laws and international treaties to govern more explicit contact attempts. Without prior broad agreement from some globally representative body, Gertz says, contacting extraterrestrials should be considered “as the reckless endangerment of all mankind, and be absolutely proscribed with criminal consequences, presumably as exercised at the national level, or administered through the International Court of Justice in The Hague.” Currently, no such prohibitions exist. Some informal protocols for interacting with alien civilizations have been adopted by researchers involved in SETI, but these are far from legally binding governmental regulations. That’s mostly because, up to now, talking about meeting or contacting aliens has seemed widely speculative — if not a little deranged — despite the apparent scientific plausibility of such an event. It’s not easy to weigh the pros and cons of activities around which so much remains unknown. We don’t know if there are any aliens. They might be friendly. They might not be. Given the potential risks involved with trying to make contact, perhaps it would be safer and wiser to just wait — we can always reach out later, and meanwhile, our abilities to do passive listening are rapidly growing more powerful. In 2015, SETI launched a new 10-year program called Breakthrough Listen, funded by a $100 million donation from Israeli-Russian billionaire Yuri Milner. As a result, SETI is now recording more signals than ever before, over a frequency range some tenfold larger, and bringing more computational power to bear on analyzing the recorded signals. It’s impossible to know how close or far from making a discovery we may be, but Gertz estimates that our chances are at least 100 times greater than they used to be. The search is also benefiting from astronomers’ knowledge of exoplanets — planets in orbit around stars other than the sun. Since the first exoplanet was found in 1992, we’ve identified nearly 5,000 more, and the rate of discovery is accelerating. Each one give SETI researchers new promising targets to scrutinize. Personally, all of this makes me dead-set against any experimentation with attempting to contact other civilizations. Why take cosmic risks when we may have a far safer pathway to discovering them, if they’re out there? Of course, even listening comes with some potentially fraught governance issues also: If and when someone really identifies an alien signal, we’ll need to decide if we should reply — and if so, how. Surely such an act — putting all of humanity at risk — ought to be the result of some collective decision. But there’s no mechanism to encourage that now. Any individual or nation could take the human response into their own hands. Both paths — listening for aliens or trying to call them — have reached the stage where they require broader public discussion, with an eye to developing sensible regulation. That’s going to take the efforts of leaders from many nations, presumably coordinated through the United Nations or some similar international body. It should happen now. Or soon. Before it’s too late.

#### First contact will be with an alien civilization that is exponentially more technologically advanced than humans

Carter, 2021 – Forbes Senior Contributor

Jamie Carter, Senior Contributor at Forbes. Space, travel and tech journalist. “Our ‘First Contact’ With Aliens Will Be With A Superior Civilization, Say NASA Scientists As They Narrow The Hunt”, Mar 23, 2021, 11:00pm EDT, <https://www.forbes.com/sites/jamiecartereurope/2021/03/23/our-first-contact-with-aliens-will-be-with-a-superior-civilization-say-nasa-scientists-as-they-narrow-the-hunt/?sh=52a956565c31>, accessed 12/2/21, sb

Humans’ “first contact” with aliens is likely to be with a civilization much more technologically advanced than ours, according to a new NASA-funded study into the search for intelligent extraterrestrial life (SETI). According to the paper published in the specialized journal Acta Astronautica, the easiest way to detect extraterrestrial civilizations is by searching for “technosignatures”—evidence for the use of technology or industrial activity in other parts of the Universe. Technosignatures, many of which are based on how Earth might look now, or in the past or future, to alien onlookers, include: Radio signals, such as the Arecibo message we humans sent in the direction of globular star cluster M13 on November 16, 1974. The presence of industrial pollution in the atmosphere of a planet. For example, the presence of nitrogen dioxide—as studied recently by the same team of researchers—or the wholly artificial chlorofluorocarbons (CFCs), both of which are evidence for there being a technologically advanced civilization on Earth. Large swarms of satellites around a planet. Gigantic space engineering around exoplanets, such as heat shields or “Dyson spheres” that harvest solar energy from the local star. Crash sites on the Moon or Mars of probes that might have been sent here in a distant past. However, the study—which was funded by NASA Goddard’s Sellers Exoplanet Environments Collaboration (SEEC) and the NASA Exobiology program—argues that our search for technosignatures would likely only be successful at finding much more advanced technology than humans can currently create. That raises the spectre of “contact inequality.” “It seems unlikely that civilizations with a relatively low level of technological development would enter into contact with each other, since that would require either very high sensitivities or highly visible engineering,” reads the paper. “Less advanced civilizations lack the sensitivity needed to detect other civilizations unless they have built very large or luminous structures.” In short, we don’t yet have instruments sensitive enough to definitively find “another Earth” by detecting an alien civilization outright. That’s despite huge advances in our astronomical instrumentation in the past decade that have revolutionized the science of discovery and study of exoplanets, which now number 4,000+. “For us to detect such signals at interstellar distances with our current sensitivities, such signals would need to be stronger than those produced by current human civilization, particularly the unintentional ones,” read the paper. “Only those species that have constructed or developed technology is much larger or more luminous than any of our own can be detected with our current astronomical infrastructure.” So we’re looking for massive, unmistakable signs of alien civilisations far more advanced that we are. “The idea of searching for technosignatures draws upon the technology we have on Earth today and possible extensions of our technology into the future,” said Jacob Haqq-Misra, a co-author of the article and chairman of the TechnoClimes 2020 organizing committee. “This does not necessarily mean that any extraterrestrial technology must be like our own, but imagining plausible extensions of our own future is one place to begin thinking of astronomical searches we could actually do to look for possible technosignatures.” The study puts forward a plan, and a new way of classifying the technosignatures as a function of their “cosmic footprint”—the relative size scale of a given technosignature in units of the same technosignature produced by current Earth technology. It’s a measure of how easy to see a technosignature might be from a huge distance. The researchers call this an “ichnoscale.” Scale and scope is tricky since a search for crashed spacecraft on the Moon could easily be done, whereas a search for Dyson spheres in our galaxy would have a billion potential targets, according to the paper. Don’t get the idea that armies of astronomers and NASA scientists are spending their days and nights searching for traces of extraterrestrial intelligence. They're not. In fact, the renewed interest in “technosignature science” is largely down to the fact that it can be done purely by taking advantage of data that is already being collected astronomical purposes. For example, many space telescopes and survey satellites—such as TESS—observe stars to see if exoplanet are transiting across them. That’s exactly the same science that needs to be done to search for technosignatures. The next generation of telescopes—such as the James Webb Space Telescope (JWST), but many others—will also, for the first time, allow a search for so-called biomarkers, evidence for life on other planets. While characterizing the atmosphere of an exoplanet it will by default detect the presence of, say, CFCs or nitrogen dioxide. It’s therefore something of a free hit, according to the researchers—the modern search for aliens can be all about synergy. A free hit it may be, but it could also be a fruitless one. “We have no idea whether intelligence is something very common in the Universe or, on the contrary, whether it is extremely rare,” said Hector Socas-Navarro, an IAC researcher, the Director of the Museum of Science and the Cosmos, of Museums of Tenerife, and the first author of the paper. “For that reason we cannot know whether these searches have any chance of success. There is no choice but to search and see what we find, because the implications would be tremendous.”

#### Dark Forest theory means civilizations either stay hidden or encounter a more technologically advanced civilization that destroys it – human survival depends on staying hidden

Yasser, 2020

Shehab Yasser, Software Engineer at Microsoft, “Aliens, The Fermi Paradox, And The Dark Forest Theory: A Game Theoretic View”, Oct 21, 2020, <https://towardsdatascience.com/aliens-the-fermi-paradox-and-the-dark-forest-theory-e288718a808>, accessed 12/7/21, sb

Cixin’s Premise Although there is a cornucopia of posited explanations to the Fermi paradox, we discuss the Dark Forest theory and model it as a sequential game with incomplete information. The Dark Forest theory is described below by Liu Cixin, a Chinese science fiction writer, in his trilogy “Remembrance of Earth’s Past.” “The universe is a dark forest. Every civilization is an armed hunter stalking through the trees like a ghost, gently pushing aside branches that block the path and trying to tread without sound. Even breathing is done with care. The hunter has to be careful because everywhere in the forest are stealthy hunters like him. If he finds another life — another hunter, angel, or a demon, a delicate infant to tottering old man, a fairy or demigod — there’s only one thing he can do: open fire and eliminate them.” The Dark Forest theory states that our galaxy does contain civilizations in abundance described in the Drake equation. These civilizations have still intentionally forgone communicating with others out of fear that other civilizations might destroy them. The theory also states that civilizations that have not practiced this caution have already been destroyed under such circumstances. The Search for Extraterrestrial Intelligence Institute (SETI), previously a government body and now a nonprofit located in Mountainview in California, postulates that the theory is not implausible. The official policy within the SETI community is only to collect information and not respond to any signals or evidence of extraterrestrial intelligence out of fear that this could be the end of life on Earth. Here we verify Cixin’s conclusion using informal incentives-based reasoning starting with two axioms: Any given civilization’s goal is survival. Civilizations continuously grow and expand, but resources in the universe are finite. Given these axioms, and the physical nature of the universe in which stars are extremely distant from one another, communication between civilizations would initially take place at a drastically slow rate of tens to hundreds of years, since the speed of light limits us. Cixin describes a “chain of suspicion” that is created between any two civilizations as they cannot confidently evaluate an honest intention or a potential threat the other poses. By the time a civilization has gathered enough information to consider another unnegotiable, that other civilization could be well underway to destroy them. Furthermore, leaving a less technologically advanced — and thus less threatening — civilization alone is not necessarily a safe option due to the potential for exponential and unpredictable technological advancement rates a civilization can undergo. Even if a civilization’s technological progress never outpaces that of another’s, it could broadcast information about that civilization to other civilizations, who might themselves be more technologically advanced and decide to destroy it. A game-theoretical explanation of the Dark Forest Theory We explain the dark forest theory using two scenarios, and then we generalize them further to reach a game-theoretical model faithful to the Dark Forest Theory. The First Scenario Two civilizations on two different planets already know the existence of one another. They are both advanced enough to destroy the other, and doing so would give them access to additional resources. Mathematically speaking, the payoff of being destroyed is -inf, and the payoff of doing nothing is zero. However, the payoff of destroying another civilization is some number theta, where theta > zero since some of the finite resources in the universe have now become available. These newly-freed resources allow the destroyer to use them to expand, serving the Cixin’s second axiom. Thus, The first scenario is an extensive-form game with two rounds and the following properties: There are two civilizations (C1, C2) that are aware of one another. C1 takes its turn first, then C2 takes its turn. Each civilization has the same two possible actions: Destroy (the other civilization) or Do Nothing. It is straightforward that the dominant strategy and subgame perfect for C1 is to destroy C2. By choosing the destruction action, C1 ensures a payoff of theta > 0. If C1 were to choose “Do Nothing,” it would leave C1 under the mercy of C2. Using backward induction, “Destroy” is the only safe option for C1. Corollary: If a civilization can destroy another, it will. The Second Scenario A civilization could broadcast its existence to other civilizations. The second scenario is an extensive form game with two rounds and the following properties: There are two civilizations (C1, C2) that are not aware of one another. C1 takes its turn first, then C2 takes its turn. Each civilization has the same three possible actions: Destroy a civilization: This action can only target civilizations if it knows their existence. Broadcast: Let the other civilization know of its existence. Do Nothing. It is the dominant strategy and sub-game perfect for C1 to Do nothing. Again broadcasting puts C1 under C2’s mercy. By backward induction, Do nothing is the only safe option for C1. Corollary: A civilization will never share information about its presence with a civilization that can destroy it. The Dark Forest Theory The Dark Forest Theory builds upon the previous scenarios with a few more generalizations: The games are infinitely repeated throughout time. There are many civilizations (more than two). Technology increases somewhat randomly through time. In repeated games, Civilization A can’t let Civilization B live just because Civilization B can destroy Civilization A in a future turn if its technological level increases. This is closely related to the first scenario. Civilizations can also broadcast other civilizations’ existence information to much stronger civilizations, threatening their demolition of the revealed civilizations by any other civilizations to which they are revealed. This gives no civilization any incentive to share the knowledge of its existence with any other, be it weaker or more potent in technological advancement. This is closely related to the second scenario. It becomes clear that it’s Pareto Optimal and even Nash Equilibrium to destroy any civilizations, those one knows of, and not share existence information out of fear of being demolished by a more potent civilization — or even a weaker one at a future turn of the game. We might also go further and say that civilizations that shared their existence were destroyed. It might sound gloomy somehow antisocial to not make friends across the vast universe. However, with how little we know about other planets and systems, and in the absence of a common language and understanding, and with the presence of the chain of suspicion, it makes sense to stay silent or face demolition!

#### Conflict would be inevitable – human and extraterrestrial civilizations both selected towards predation – misunderstanding causes confrontation

Schulze-Makuch, 2021 – Technical University Berlin, Germany Professor

Dirk Schulze-Makuch is a Professor at the Technical University Berlin, Germany, and an Adjunct Professor at Arizona State University and Washington State University. He has published eight books and nearly 200 scientific papers related to astrobiology and planetary habitability. His latest books are The Cosmic Zoo: Complex Life on Many Worlds and the 3rd edition of Life in the Universe: Expectations and Constraints. “The Science of Aliens, Part I: Would They Be Friendly, or Threatening?”, APRIL 6, 2021, <https://www.airspacemag.com/daily-planet/science-aliens-part-i-would-they-be-friendly-or-threatening-180977432/>, accessed 12/7/21, sb

As an astrobiologist I often get the question: What would aliens be like? By “aliens” the questioner usually means complex, animal-like beings we can communicate with in some way, implying that they would be a technologically advanced intelligent species like us. In part one of this new series, I’ll consider whether, despite likely superficial differences in how we look, extraterrestrial civilizations would share some common behavioral patterns with humans. My sense is that they would. In fact, that was the topic of a 2010 paper by my former doctoral student, Marina Resendes de Sousa Walther-António. In the movies we see aliens portrayed across a broad spectrum, from the brutish killers in the Alien and Predator series to the benign and empathetic being in E.T. the Extra-Terrestrial. Can science help us determine which would be more likely? To start with, any intelligent alien species would likely have predatory roots, because the evolutionary trait of intelligence is promoted if you have to hunt for your food. A lion has to be smarter than a grazing antelope. A wolf has to be smarter than a mountain lion—because it’s not as strong, it has to anticipate the prey’s next move and communicate with other wolves in the pack. At some point, a predatory species has to learn to hunt sustainably, otherwise prey—and eventually predator—become extinct. More likely, they would come to rely on additional food sources, more predictable and long-term, as humans did when they developed agriculture. This requires even more social structure and communication. When Marina and I looked at this problem in 2010, social structure turned out to be the key. It is critical to pass on knowledge gained through experience from one generation to the next. And a species’ social behavior cannot be too aggressive. Our close relatives, chimpanzees and gorillas—with whom we share 99 and 98 percent of our genes, respectively—are characterized by male competition, aggression, and instigation of fear. Compare this to our hominid ancestor from more than four million years ago, Ardipithecus ramidus, who had a social system in which females chose their own partners. That led them to have reduced levels of aggression and more stable social arrangements, meaning that outsiders were more tolerated and innovations (such as the use of new tools) were more easily accepted by the community. Of course, we humans—the more “benign” lineage of the great apes—have a history marred by episodes of violence and savagery. But most of the time, even for long periods, we get along with each other. Collaboration prevails over competition. Without that cooperation, complex societies would be impossible. It would likely be the same for technologically advanced aliens, although their specific social structure may look very different. Here on Earth, the extreme case of eusociality may be relevant to our speculation about alien civilization. The “swarm intelligence” of social insects such as bees, ants and termite colonies is quite astonishing, and is even found in a few mammal species such as the naked mole rat. Eusocial species are very sophisticated, with social cohesion, rudimentary language, sustainable farming practices, and self-built complex housing structures that they keep in sanitary conditions. The naked mole rat could serve as a model for how a species could become dominant on a planet whose surface has become otherwise uninhabitable. There is a drawback to eusociality, however. Much of the individual organism’s behavior is genetically programmed, and there is little ability to adapt to changing environmental conditions. A more individualistic approach to social structure, as with humans, seems more advantageous. Personally, I value my individuality quite a bit. Let’s hope the aliens do so as well. Perhaps the biggest threat from intelligent extraterrestrials would come not from a desire to dominate—we love our dogs and cats, after all, even though they are less intelligent than we are—but from misunderstandings. Like humans, they would likely still have aggressive traits—since both of us, in our past, had to fight to arrive at the top of the food chain.

#### Contact paradox – they won’t be nice and will wipe us out – assigning positive morality to aliens isn’t worth the risk they’re not – extinction

Banas, 2020

Jacob Banas is a writer for Futurism, “Could Searching for Alien Life Attract Hostile Extraterrestrials?”, 1/31/2020, <https://futurism.com/searching-alien-life-attract-hostile-extraterrestrials>, accessed 12/7/21, sb

As we beam our existence out into the universe, we’re making a bold assumption that any aliens who pick it up won’t use their superior technology to kill us all. That’s a cautionary point in “The Contact Paradox,” a rousing new essay collection about the search for extraterrestrial intelligence — better known as SETI — from Astronomy Now editor Keith Cooper. There’s a sense that SETI is already old. It began, in fits and starts, shortly after the invention of radio technology in the early 1900s, with more concentrated efforts spinning up around 1980 with the help of visionaries including Carl Sagan. But investment in SETI projects continues around the world, with ever more cosmic listening devices brought online, along with new computing tools to search the data they collect. But despite building increasingly powerful radio telescopes, according to Cooper’s wide review of literature and subject matter experts, there are mind-bending assumptions that underlie many SETI projects — and which complicate their potential for success. Surely, goes one optimistic line of thought, it would be to humanity’s benefit to find benevolent alien species among the stars. They could share a great cache of knowledge with us, and more fundamentally just let us know that we aren’t alone in a cold universe — ideas that tend to assume, in one form or another, that advanced civilizations become morally pure. But, on the other hand, belligerent or self-interested extraterrestrials could just wipe us the fuck out. “Even if one could detect a pattern of increasingly moral enlightenment in human history, it would still be dangerous to extrapolate that into the future,” University of Oxford’s Future of Humanity Institute director Nick Bostrom told Cooper. “In fact I think that argument to be extremely weak, but I would imagine that it is what underpins some people’s optimism about technologically advanced civilisations.”

#### We are prone to alien attack now – Hostile aliens have 100 years to wipe humans out before humans develop the capacity to retaliate which stops the attack

Korhonena, 2013

Janne M. Korhonena, Aalto University, DF Research Wing, Betonimiehenkuja 5, 02150 Espoo, Finland, “MAD with aliens? Interstellar deterrence and its implications”, <https://arxiv.org/ftp/arxiv/papers/1302/1302.0606.pdf>, accessed 12/7/21, sb

The study also suffers from obvious limitations, the chief of which is that we cannot know much anything about the reasoning processes of possible ETIs. As plausible as it sounds to argue that any advanced civilizations must be somewhat rational in the sense we would understand it, the specifics of that rationality will certainly differ. Regarding the subject of this paper, it is almost equally plausible that the ETIs would consider the elimination of “inferior” species their sacred duty, to be undertaken despite the risks. Likewise, it is possible that extremely advanced “true” star faring civilizations will have their reasons to destroy less advanced civilizations even if they cannot pose a threat to them. It is also possible that a civilization will develop technologies that make them practically invulnerable to any retaliation from other civilizations in the vicinity. Unfortunately, we cannot draw from better sources than our own history when arguing whether or not a civilization would initiate a preventive attack against other civilization. Based on that history, it would seem that any possibly paranoid ETIs that may be listening for humanity’s signals are in a position that is roughly analogous to the position of the U.S. in the period between the end of the World War Two and the first Soviet nuclear bomb. Hostile ETIs could probably hit us severely and have a good chance of destroying us for good, but they must also assume that every year brings us closer to the capability to retaliate. If the human example is anything like the average, the possibility of receiving just one hit from a high-velocity interstellar probe on exchange should make the would-be attacker think twice before committing acts of aggression. Of course, whether our capabilities would in the end be enough to deter attack is something that cannot be conclusively proved, except in the negative. However, if the current pace of technological development continues, the ETIs need to attack during this century – which would require them to have ready forces within approximately 100 light years, if detection is assumed to be based on leaked electromagnetic radiation – or they will likely have to confront a civilization that already has a sizable presence in space and is building its first interstellar spacecraft. Reliably destroying such a civilization may prove to be challenging, perhaps challenging enough to cause them to reconsider. However, the designers of interstellar spacecraft need to consider that their creations may be seen as threatening by other species. It is unfortunately all too easy to imagine a scenario where a human flyby probe to a supposedly uninhabited system accidentally damages a civilization that had chosen to remain quiet, perhaps due to paranoid fear of detection, and the said civilization sees no alternative but to strike back in order to stop further “attacks.” In short, the mission planning of any interstellar spacecraft must ensure beyond reasonable doubt that the target system either does not host intelligent life or that the mission will not even appear to pose a danger to them. Of course, detecting intelligent life that does not want to be detected will be a difficult challenge.

#### First contact causes human to human conflict – super power world war 3

Andersen, 2017

ROSS ANDERSEN is a senior editor at The Atlantic, where he oversees the Science, Technology, and Health sections. He was previously deputy editor of Aeon Magazine. “What Happens If China Makes First Contact?” December 2017, <https://www.theatlantic.com/magazine/archive/2017/12/what-happens-if-china-makes-first-contact/544131/>, accessed 12/7/21, sb

Liu told me that first contact would lead to a human conflict, if not a world war. This is a popular trope in science fiction. In last year’s Oscar-nominated film Arrival, the sudden appearance of an extraterrestrial intelligence inspires the formation of apocalyptic cults and nearly triggers a war between world powers anxious to gain an edge in the race to understand the alien’s messages. There is also real-world evidence for Liu’s pessimism: When Orson Welles’s “War of the Worlds” radio broadcast simulating an alien invasion was replayed in Ecuador in 1949, a riot broke out, resulting in the deaths of six people. “We have fallen into conflicts over things that are much easier to solve,” Liu told me.

#### Any collective human response to aliens causes war on Earth – which only worsens our response to Aliens – cause nuclear war and defeat and surrender to Aliens – Aliens manipulate countries, cause war

Dujmovic, 2018

Jurica Dujmovic is a columnist for MarketWatch. He is a business publisher, consultant, designer and gamer. Follow him on Twitter @JuricaDujmovic., “Opinion: This is what humans might do if there were an alien invasion”, Published: May 9, 2018 at 12:06 a.m. ET, <https://www.marketwatch.com/story/this-is-what-humans-might-do-if-there-were-an-alien-invasion-2018-05-09>, accessed 12/7/21, sb

At the same time, the second part of the response — mobilization of military land and air units and preparation of weapons of mass destruction — would be silently executed. Leaders of world governments would meet in secret to discuss various scenarios based on preliminary assessment reports. A special Earth Defense Council (EDC) might be formed with the task of defending the planet in case all attempts to communicate with the aliens fail or if they turn hostile. The human factor This is where things would get complicated. Some countries would undoubtedly feel left out by the EDC. Others would expect it to use the aliens as an excuse to invade their territory and would prefer to be left out. Finally, some countries would consider aligning themselves with the aliens if this would guarantee their survival. How things would go on from there would depend on aliens and humans alike. There is a high chance that one or both sides could misjudge the other’s action as an act of violence, which could escalate to all-out war. It’s easy to assume what would happen next. A global task force would be formed with the goal of defeating the space invaders in the most effective and quickest way possible. All rules of war would be ignored at this point. However, the fight would be anything but easy. Their weaponry notwithstanding, the aliens would have other “allies” on Earth, such as chaos among civilians. When the streets are empty and the military is mobilized to defend the perimeters, crime flourishes. It’s easy to rob a home, a store or a pharmacy when there’s no one around, and criminals would use this opportunity whenever they could. This would put additional strain on civilians, as families in their bunkers and shelters would also become targets. The other ally would be infighting among countries. Global chaos can be an excellent opportunity to attack a weakened neighbor, especially one that has mobilized the majority of its forces to combat the alien threat. These opportunities wouldn’t last long, so attacks would have to be swift, merciless and effective. Countries under attack would have to withdraw their forces from the EDC and defend what’s left of their sovereignty. Divide and conquer While many movies depict alien technology as the superior one, I don’t think this needs to be the case for them to win. All they need to do is help fuel global conflict so that the EDC gets destabilized in such a way it can’t provide a coordinated response to alien threats. At this point, aliens would fight to hold the status quo against the most powerful countries, all the while decimating the weakest. But not all alien conquests would be violent. In their attempt to weaken the human collective, they would aid countries locked in conflict, perhaps by dropping caches of advanced weaponry, or even sending in their own troops. They would then make allies of the winners and draw further resources from conquered territories, using it to fuel their war machinery (assuming they attack the Earth for its resources). As the alien invasion progresses, their war against world’s most powerful countries would convert to a war of attrition. Cutting off major supply routes, destroying resource caches and causing public disarray would be a far more effective weapon than destroying the planet they came to conquer. Finally, humans would be forced to either use nuclear weapons or negotiate with aliens. My guess is that both options would be used in the end. Depending on the success of the nukes, negotiations would either become unnecessary or result in utter defeat. Technology, weaponry or superpowers aren’t always the be-all and end-all. In war, whether it’s fought on land, air or in space, strategy reigns supreme.

#### Contact causes extinction – even if they’re good – from diseases and accidents – but they’re bad, that’s worse and causes extinction

Sample, 2011

Ian Sample is science editor of the Guardian. Before joining the newspaper in 2003, he was a journalist at New Scientist and worked at the Institute of Physics as a journal editor. He has a PhD in biomedical materials from Queen Mary's, University of London. Ian also presents the Science Weekly podcast. “Aliens may destroy humanity to protect other civilisations, say scientists”, Thu 18 Aug 2011 14.04 EDT, <https://www.theguardian.com/science/2011/aug/18/aliens-destroy-humanity-protect-civilisations>, accessed 12/7/21, sb

The most unappealing outcomes would arise if extraterrestrials caused harm to humanity, even if by accident. While aliens may arrive to eat, enslave or attack us, the report adds that people might also suffer from being physically crushed or by contracting diseases carried by the visitors. In especially unfortunate incidents, humanity could be wiped out when a more advanced civilisation accidentally unleashes an unfriendly artificial intelligence, or performs a catastrophic physics experiment that renders a portion of the galaxy uninhabitable. To bolster humanity's chances of survival, the researchers call for caution in sending signals into space, and in particular warn against broadcasting information about our biological make-up, which could be used to manufacture weapons that target humans. Instead, any contact with ETs should be limited to mathematical discourse "until we have a better idea of the type of ETI we are dealing with." The authors warn that extraterrestrials may be wary of civilisations that expand very rapidly, as these may be prone to destroy other life as they grow, just as humans have pushed species to extinction on Earth. In the most extreme scenario, aliens might choose to destroy humanity to protect other civilisations. "A preemptive strike would be particularly likely in the early phases of our expansion because a civilisation may become increasingly difficult to destroy as it continues to expand. Humanity may just now be entering the period in which its rapid civilisational expansion could be detected by an ETI because our expansion is changing the composition of the Earth's atmosphere, via greenhouse gas emissions," the report states. "Green" aliens might object to the environmental damage humans have caused on Earth and wipe us out to save the planet. "These scenarios give us reason to limit our growth and reduce our impact on global ecosystems. It would be particularly important for us to limit our emissions of greenhouse gases, since atmospheric composition can be observed from other planets," the authors write. Even if we never make contact with extraterrestrials, the report argues that considering the potential scenarios may help to plot the future path of human civilisation, avoid collapse and achieve long-term survival.

### Framing

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

#### 1] Death is bad and outweighs

Paterson 1 – Department of Philosophy, Providence College, Rhode Island. (Craig, “A Life Not Worth Living?”, Studies in Christian Ethics, <http://sce.sagepub.com>)

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

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

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

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

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