I affirm the resolution: **Resolved: The appropriation of outer space by private entities is unjust.**

Observation: The aff is not required to provide a plan or a specific advocacy, only to oppose private appropriation.

-OR-

Thus the plan: states ought to amend the Outer Space Treaty of 1967 to ban the appropriation of outer space by private entities.

Appropriation is defined as:

* “the [act](https://dictionary.cambridge.org/us/dictionary/english/act) of taking something for [your](https://dictionary.cambridge.org/us/dictionary/english/your) own use, usually without [permission](https://dictionary.cambridge.org/us/dictionary/english/permission)” by the Cambridge Dictionary[[1]](#footnote-0)

Private entity is defined as:

* “any person or private group,” organization, proprietorship, partnership, trust, cooperative, corporation, or other commercial or nonprofit entity, including an officer, employee, or agent thereof. [[2]](#footnote-1) by Cornell Law School.

Outer space is defined as:

* By Oxford dictionary as the physical universe beyond the earth's atmosphere. [google]

# Contention 1: Colonization leads to devastating, inevitable war

# **Subpoint A: Commercial space industry key to sustainable program development – governments change goals frequently, and cannot sustain**

**Martin & Olson 09** [Mr. Gary Martin and Dr. John Olson, NASA, “COMMERCIALIZATION IS REQUIRED FOR SUSTAINABLE SPACE EXPLORATION AND DEVELOPMENT”, 10/2009, https://ntrs.nasa.gov/api/citations/20100027548/downloads/20100027548.pdf] /Triumph Debate

The U.S. Space Exploration policy outlines an exciting new direction in space for human and robotic exploration and development beyond low Earth orbit. Pressed by this new visionary guidance, human civilization will be able to methodically build capabilities to move off Earth and into the solar system in a step-by-step manner, gradually increasing the capability for humans to stay longer in space and move further away from Earth**. The new plans call for an implementation that would create an affordable and sustainable program in order to span over generations of explorers**, each new generation pushing back the boundaries and building on the foundations laid by the earlier. **To create a sustainable program it is important to enable and encourage the development of a self supporting commercial space industry** leveraging both traditional and non-traditional segments of the industrial base**. Governments will not be able to open the space frontier on their own because their goals change over relatively short timescales and because the large costs associated with human spaceflight cannot be sustained.** A strong space development industrial sector is needed that can one day support the needs of commercial space enterprises as well as provide capabilities that the National Aeronautics and Space Administration (NASA) and other national space agencies can buy to achieve their exploration goals**. This new industrial space sector will someday provide fundamental capabilities like communications, power, logistics, and even cargo and human space transportation, just as commercial companies are able to provide these services on Earth today**. To help develop and bolster this new space industrial sector, NASA and other national space agencies can enable and facilitate it in many ways, including reducing risk by developing important technologies necessary for commercialization of space, and as a paying customer, partner, or anchor tenant. **This transition from all or mostly government developed and operated facilities and services to commercial supplied facilities and services should be considered from the very earliest stages of planning.** This paper will first discuss the importance of space commercialization to fulfilling national goals and the associated policy and strategic objectives that will enable space exploration and development. Then the paper will offer insights into how government can provide leadership to promote the nascent commercial space industry. In addition, the paper describes programs and policies already in place at NASA and offers five important principles government can use to strengthen space industry

### Subpoint B: Space Colonization creates different species of humans

Torres 18

Phil Torres,

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As humanity expands into space and our population grows, the human lineage will un-

dergo a process of radical species diversification. The result will be a vast multiplicity of distinct

“species.” There are two factors that will drive this process. First, we live in a Darwinian world

whereby the mechanism of natural selection is constantly tweaking the genomes of organisms to ensure a satisfactorily good “fit” between the “features” of organisms and the “factors” of their

Environments. The fact is that no planetary milieu, however terraformed, will be identical to

that found on Earth, nor will any artificial environment constructed inside spacecraft like O’Neil cylinders. Such environments may be associated with different gravitational properties, atmos- pheric pressures and chemical compositions, seasonal variations, circadian and tidal patterns, flora and fauna, solar luminosities, and so on. These factors will amalgamate into selective envi- ronments that could influence differential reproduction rates, thereby modifying the frequencies of different alleles within spacefaring populations. Interworld transportation may initially result in some degree of gene transfer between civilizations, but as future persons become increasingly spread out, parapatric speciation may yield to allopatric speciation. Although one might surmise that modern civilization (on Earth) has largely neutralized the effects of natural selection, this is probably false. Some geneticists even believe that human evolution by natural selection has ac- celerated in recent history, with examples being lactose tolerance and perhaps the exceptional intelligence of Ashkenazi Jews (Gibbons 2007; Pinker 2011b). Another evolutionary mechanism that could bring about biological evolution is genetic drift, whereby gene frequencies fluctuate randomly. This could be exacerbated by founder effects resulting from single or a small fleet of spacecraft transporting a relatively small number of individuals who ultimately yield a large pop- ulation; in this case, the spacecraft would induce a “population bottleneck.”

Second, we live in a Kurzweilian world whereby the trajectory of our evolutionary development is increasingly within our own control. In other words, in addition to the unintelligent

design of natural mechanisms, we now have the option of intelligently designing our phenotypes to optimize our fit to increasingly artificial environments and realize organismal qualities that we value for positional or intrinsic reasons. The result is a process of cyborgization, or the fusing to- gether of technology and biology, artifact and organism, resulting in posthuman properties like enhanced cognition and morality, indefinite lifespans, expanded emotional ranges, and so on. According to Andy Clarke (2003), humans are “natural born cyborgs” who have always used technology to substitute, modify, and enhance our phenotypes. In fact, the archeological record of rudimentary tools—the Oldowan toolkit—roughly coincides with the emergence of Homo ha- bilis, or “man the maker.” But the pace of cyborgization has undergone a rapid increase in recent decades, perhaps following Kurzweil’s Law of Accelerating Returns (Kurzweil 2005). The contemporary human is not merely fused with artifacts like shoes, clothes, and glasses, but computers, smartphones, automobiles, pacemakers, and neuroprosthesis, to name a few. At the extreme, technology could completely replace biology, an end achievable through whole-brain emulation or the creation of AGI software via direct programming, artificial evolution, or recursive self-improvement (see Bostrom 2014). These wholly artificial beings could then reside in either the “real” world as embodied androids or simulated worlds like those described by Robin Hanson in The Age of Em (2016).

There are a few important consequences of Darwinian and Kurzweilian evolution that relate to the possibility of future species acquiring distinctive and unique cognitive-emotional ar- chitectures. First, consider the causal role that emotions play in driving behavior. Happiness, sad- ness, fear, anger, surprise, and disgust can all motivate us to act in various ways. It follows that posthuman species that develop qualitatively different emotional repertoires could be motivated to act in novel ways, some of which could utterly baffle us. Weak analogues can be found among humans: for example, an atheist might find the religious fanatic’s decision to blow him- self up in a crowded market deeply perplexing. Yet all humans share the same fundamental neu- ral structures and therefore basic emotional range. Thus, the difference between our emotionality and that of a posthuman species could be more analogous to the differences between, say, mice and chimpanzees, or chimpanzees and humans. A related issue concerns the “orthogonality the- sis,” which states that any set of final goals can in principle be combined with any level of intel- ligence (Bostrom 2014). It follows that a posthuman species could become superintelligent and still be driven by goals that appear irrational to us (that is, in the value rather than instrumental sense of rationality; see Author).

…

The point is that different species could have fundamentally different models of mind- independent reality, and this could enable them to intervene on the universe in ways that are re- ciprocally unintelligible to each other. The result could be a rather confusing, unprecedented, and potentially catastrophic sort of “mutually asymmetrical warfare” (MAW), whereby each participant has access to weapons whose underlying causal mechanisms are cognitively closed to the others. Thus, one species might observe something happening—perhaps something harmful—with no way of figuring out how some species on the other side of the galaxy accomplished the feat, or vice versa. Unlike a technologically “advanced” civilization on Earth fighting a technologically “primitive” society—as was the case when Europeans reached the Americas—space wars between posthuman species with different mind-types would be more like a military confrontation between Homo sapiens and bonobos, except that in this terrestrial case the asymmetry is one-sided rather than mutual.

Yet another kind of diversification that will occur as our descendants propagate through space is cultural or memetic. First, consider that—as discussed below—the cosmic speed limit of light will reduce the efficacy of communication between distantly located civilizations (Deudney forthcoming). This will, in turn, reduce inter-civilizational meme-flow and enable unique tradi- tions of thought to take shape in quasi-isolated regions of spacetime. Given the possibility of rad- ically different cognitive-emotional architectures, the cultural, political, governmental, religious, linguistic, intellectual, philosophical, scientific, technological, and so on, traditions that arise could be profoundly different from each other, and from the various traditions that have emerged during our own short history on Earth. In a phrase, colonizing space will have the exact opposite effect that globalization has had on Earth. Whereas the latter has homogenized the world in innumerable ways and, indeed, will ultimately yield a single race of brown-skinned humans, space colonization will generate unprecedented phylogenetic and ideological diversity. The global vil- lage will fracture into an astronomical number of cosmic settlements.

### Subpoint C: Conflicts will inevitably arise between humans in space

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Phil Torres,

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Borrowing from the “agential risk” framework that I have elsewhere outlined, we can fur- ther identify actors who are driven by “pro-mortalist” ethical systems, extreme environmentalist ideologies, or “idiosyncratic” beliefs/desires about how the world is and ought to be (Author 2017a). For example, “radical negative utilitarians” (RNUs) believe that one’s behavior is mor- ally good only insofar as it reduces the suffering of sentient beings. Since the ultimate way to reduce suffering is to eliminate that which can suffer—preferably through some painless, instanta- neous process, which may become possible, as we will see below—it follows that the annihila- tion of all life in the universe constitutes the best possible outcome. The point is that radical NUs exist today on Earth, and there’s no reason to believe that this moral stance couldn’t spread to or spontaneously emerge within other civilizations, thereby posing an existential threat to everyone. One can similarly imagine some form of “cosmic environmentalism” that sees the colonization of space by descendants of Homo sapiens as destroying the “natural beauty” of the universe— especially if destructive conflicts become the norm. There could arise sentiments according to which our progeny (their contemporaries) are “Posthumanpox” that have spread like a virus, destroying everything that it comes into contact with. As a virus, this Posthumanpox must be eliminated in toto, just as some radical environmentalist groups have advocated the complete extermination of human beings on Earth through the use of advanced technologies. Given the potentially vast number of future civilizations, it stands to reason that at least some will develop contrarian views that cast our descendants’ collective exploitation of negentropy in a negative light.

And finally, there could be civilizations led by individuals who harbor a death wish for posthumanity, as it were, due to some pathological quirk in their psychological make-up. This is also not implausible given that, as I have elsewhere documented (Author), there have been nu- merous people—often of high intelligence—throughout history who have both (a) engaged in horrific violence, and (b) expressed omnicidal fantasies in either public or private. There is, in- deed, strong evidence that if such individuals were to gain access to a “doomsday machine” of some sort they would have sadistically, suicidally, and gleefully used it to annihilate their con- specifics. As Sagan (1994) notes, referring to the menacing possibility of redirecting asteroids toward Earth, there really are madmen in the world:

As a virus, this Posthumanpox must be some sort they would have sadistically, suicidally, and gleefully used it to annihilate their con- specifics. As Sagan (1994) notes, referring to the menacing possibility of redirecting asteroids toward Earth, there really are madmen in the world:

We are sometimes told that this or that invention would of course not be misused. No sane person would be so reckless. This is the “only a madman” argument. Whenever I hear it (and it’s often trotted out in such debates), I remind myself that madmen really ex- ist. Sometimes they achieve the highest levels of political power in modern industrial na- tions. This is the century of Hitler and Stalin, tyrants who posed the gravest dangers not just to the rest of the human family, but to their own people as well. In the winter and spring of 1945, Hitler ordered Germany to be destroyed—even “what the people need for elementary survival”—because the surviving Germans had “betrayed” him, and at any rate were “inferior” to those who had already died. If Hitler had had nuclear weapons, the threat of a counterstrike by Allied nuclear weapons, had there been any, is unlikely to have dissuaded him. It might have encouraged him. Can we humans be trusted with civi- lization-threatening technologies?

The very same question can and must be asked about our posthuman descendants—indeed, it may be all the more urgent given the cognitive-emotional diversification of lifeforms during the deep space diaspora. The picture that emerges from such considerations is one in which there will exist at least some, and potentially many, civilizations that are inclined toward violence. Some will engage in violence for imperialistic reasons—for gain—while the impetus for others

will be religious, apocalyptic, pro-mortalist, anti-posthumanist, environmentalist, or “psycho- pathological” in nature. The existence of Machiavellian actors will, in turn, give others a strong incentive to engage in preventive or preemptive strikes against potential predators. To quote Jack Levy and William Thompson in Causes of War (2010), “a preventive war is motivated by the perception of a rising adversary, a shift in power, and by the fear that once the adversary is stronger it will attempt to exploit its advantage through coercion or war ... and is driven by ‘bet- ter-now-than-later’ logic.” In contrast, “preemption involves a military attack in response to the virtual certainty that the adversary is about to strike and by the motivation of gaining the ad- vantages of striking first.”

Even more, the motivation to strike first need not involve a Machiavellian actor at all; it could involve two or more Tuckerian actors with no malicious inclinations whatsoever. The cru- cial idea here is what international relations scholars refer to as the security dilemma, whereby, in sum: anarchy generates uncertainty about the present and future intentions of other actors; this leads to fear, resulting in the accumulation of weapons arsenals, etc. for “defensive” purposes; this increases the fear of other actors uncertain of one’s true intentions, thereby producing a spi- ral effect, or vicious positive feedback cycle, that can foment conflict, as other actors increase their own arsenals for “defensive” purposes as well (see Tang 2009). In other words, two peacea- ble civilizations could end up warring due merely to a spiral of escalating militarization given a lack of mutual trust. A related concept is Schelling’s dilemma, also known as the “Hobbesian trap,” whereby one actor engages in a first strike against a second actor due to a fear of being im- minently attacked by the first actor. Again, neither might harbor malign goals (although one could), yet they engage in war for purely game theoretic reasons. The classic illustration of this involves a robber with a gun who breaks into a house intending only to steal jewelry; the owner wakes up and confronts the robber with a gun. Neither wishes to shoot the other, yet each fear that they will be shot if they don’t shoot first. The result is tragedy.

There is another version of this situation that doesn’t pertain to each actor’s intentions with respect to others. Rather, it arises from a combination of (a) fallibility, and (b) technological capability. For example, civilization A might decide, after sufficient deliberation, that civiliza- tion B poses no malign threat; yet it might also worry that B is not responsible enough to possess its technological power. Perhaps B is conducting high-powered physics experiments that could produce a dangerous black hole or some other catastrophic phenomenon that would affect A. If efforts by A to convince B not to run such experiments fail, it could be in A’s preservational self- interest to invade, conquer, and/or destroy B. Thinking about this situation in the context of a galaxy of potentially billions of civilizations, it could be in any given civilization’s best interest to annihilate all other civilizations in the universe, just in case they were to cause a galactic- or cosmic-scale disaster by accident. Put differently, error as well as terror could fuel inter-civiliza- tional conflicts.

…

To summarize so far: expansion into space will generate phylogenetic and ideological diversity that could yield profoundly disparate types of civilizations. The species who comprise these civilizations could have entirely different normative preferences, moral tendencies, and even scientific institutions. Some will almost certainly be violence-inclined, thus giving others an incentive to strike first. Even more, diversity with respect to cognition, emotionality, and lan- guage will undercut the mutual trust needed for otherwise irenic civilizations to avoid spirals of militarization or defect in prisoner’s dilemma predicaments. Thus, a colonized cosmos would be an arena poised and spring-loaded for violence. But is there a way to prevent conflict from breaking out?

### The only way to avoid space wars would be a united space government, which is difficult in general, but impossible under the neg world

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In Leviathan, Hobbes argues that when instrumentally rational, self-interested individuals find themselves in anarchic conditions, they will band together through a “social contract” to es- tablish a supreme governing body that has a “monopoly of the legitimate use of physical force within a given territory” (to quote Weber 1919). In exchange for giving up some personal liber- ties, this governing body—which Hobbes called “the Leviathan”—will provide the citizens with security. Consequently, war is replaced with law, anarchy with hierarchy. Moving up a level of organization from the state to the international system, one finds an isomorphic situation with re- spect to Hobbes’s “state of nature.” Here governments (and their institutions) can be seen as “in- dividuals” in an anarchic realm that consists of all other states. It follows that one way to estab- lish peace among states is to implement a global Leviathan that takes the form of a “world gov- ernment,” “singleton,” or “supersingleton” (see Bostrom 2005; Author). Moving yet another level up from the geopolitical to the cosmopolitical realm, the same conclusion follows: to re- place war with law, civilizations should band together and establish a cosmic Leviathan that pro- vides security at the minor cost of some civilizational freedoms.

Unfortunately, this appears unpromising. Let’s begin by reflecting on the inscrutable vas- titude of space and how this would affect a cosmic Leviathan’s ability to coordinate, regulate, and punish the actions of Machiavellian and Tuckerian actors. While potentially habitable ex- oplanets cluster around common solar bodies, the distance between solar systems can be im- mense. The super-Earth Gliese 581d, for example, is approximately 20 light-years from Earth, meaning that an electromagnetic signal sent as of this writing, in 2018, wouldn’t reach it until

2038. A spaceship traveling at one-quarter the cosmic speed limit—perhaps employing some form of nuclear pulse propulsion—wouldn’t arrive until 2098, and a message to simply affirm that it had arrived safely wouldn’t return to Earth until 2118. And Gliese 581 is relatively close as far as exoplanets go: the Andromeda Galaxy is some 2.5 million light-years away and the Tri- angulum Galaxy about 3 million light-years. Even more, there are some 54 galaxies in our Local Group, which is about 10 million light-years wide, within a universe that stretches some 93 bil- lion light-years across; and recall that the universe is metrically expanding at an accelerating rate. (See Figure 1.)

The point is that the laws of physics, as we know them, impose significant constraints on the travel of spacecraft and information-carrying beams, which would make a cosmic Leviathan

extremely dissimilar to the Leviathans under which we live on Earth.

Timeliness is necessary for states to satisfy their half of the social contract, and the hard limits to travel and communica- tion would render attempts to provide civilizational security across galaxy clusters, superclusters, and so on, untimely. Imagine the futility of the state if one has to wait two weeks for an emer- gency 911 call to reach the operator or for the police to show up at the scene of a bank robbery. The social contract would fall apart, and for this very reason it is unlikely to ever be “signed” by a large number of spacefaring civilizations to begin with. Another problem with the cosmic Levi- athan proposal is that it would require the approval of its member civilizations for its legitimacy, and approval would require the government to adequately represent the interests, beliefs, desires, and so on, of not only trillions and trillions and trillions of different individuals, but upwards of billions and billions and billions of different species. It is difficult to imagine how a single, cen- tralized entity could do this, especially if some of the interests, etc. of member species are in ten- sion or outright contradictory, as will no doubt be the case.

### Analytics

The appropriation of outer space by private entities specifically precludes any Leviathan from forming, therefore making space wars inevitable.

### Subpoint D: Impact scenario: Earth-Mars Cold War

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Phil Torres,

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With this brief sketch of space weaponry in mind, let’s consider the deterrence predica-

ment beginning with the colonization of Mars and expanding outward from there. As colonies on [Mars] the fourth rock from the sun become increasingly Earth-independent, they will begin to develop their own culture, political systems, religious traditions, and perhaps even technologies. The Darwinian and Kurzweilian mechanisms will also engender new forms of martian posthumans that nontrivially differ from Earth-bound (post)humans. If “morphological freedom” is granted to martian citizens, then there could emerge a general phylogenetic trajectory of the entire population in addition to more specific ontogenetic trajectories resulting from individual phenotypemodifications. (The same goes for populations on Earth.) As Deudney (forthcoming) notes, geo-

political theory predicts that groups exhibiting greater differences are more likely to engage in

conflict, and since differences are likely to evolve between the populations of Earth and Mars,

one should expect tensions to rise. There could, for example, be competition for astronomical resources (such as asteroids and comets), leading to disagreements about inter-planetary policies and practices. Domestic affairs that one side sees as worrisome—e.g., the election of a demagogic strongman with xenophobic tendencies, or the collapse of some global regulatory organization—could also lead each to question the trustworthiness of the other, thus planting the seeds for a security dilemma whereby each militarizes space, for “defensive” reasons, in response to the other militarizing space, and so on.

One might surmise here that a balance of terror could establish bipolar stability, just as MAD did during the Cold War. Yet this appears implausible given the weapons mentioned

above. For example, if one side could release self-replicating nanobots that cripple the target civilization before it can retaliate, the result would be a terror imbalance that, under certain circumstances, would make a first strike game theoretically rational. In fact, Kurzweil outlines a scenario in which ecophages destroy the entire biosphere of Earth within ~90 minutes. This would involve a two-stage attack: first, a small population of nanobots would spread around the globe, and second, at an “optimal” time this population would begin to self-replicate at an exponential pace. To put this in perspective, signal delays between Earth and Mars range from 4 to 24 minutes, depending on where each planet is in its orbit, and travel times range from 150 to 300 days. Add to this the inevitable lag of bureaucracies and the outcome is a serious credibility-of-deterrence problem. Even more, some future genius could invent a far more effective way of weaponizing nanobots in the next 100 years, at which point humanity will probably have established martian colonies.xix Related scenarios involving designer pathogens that initiate “engineered global pandemics” or planetoid bombs capable of obliterating whole metropolises—or perhaps an entire ecumenopolis, if one exists—could also be imagined, although I will leave this task for the reader.

But the situation is far worse than this, because ecophages, pathogens, and asteroids

won’t pose the greatest risks to inter-planetary peace: heliobeams, DEWs, and gravity waves not only could inflict catastrophic damage on their targets but they could do this at or near light-

speed. In a flash, one civilization could cripple the other’s key military and/or civilian infrastruc-

ture, thus rendering it unable to effectively respond to an attack. Furthermore, since the speed of light imposes an upper bound on information transfer, there could be, in principle, no early-

warning systems to alert the target civilization that an attack has commenced, which would se-

verely compromise its ability to initiate defensive measures. One might here wonder: perhaps the attackee could overcome this defensive vulnerability by stationing counterstrike military drones throughout the solar system. They could be programmed to launch a coordinated attack if they fail to receive a “no-strike” signal that is ordinarily sent to them every few minutes. Thus, the destruction of key military infrastructure would result in the cessation of this signal and therefore the initiation of a counterstrike. But this too appears otiose since a first strike using, say, DEWs could simply target these drones as well. The result is that threats of retaliation from each civilization would be literally in-credible and the balance of terror would collapse. Here we should also not overlook the potential for accidents to cause conflicts when inter-civilizational tensions are sufficiently high. The disturbing historical fact is that “pure dumb luck” played a critical role in preventing nuclear war from occurring during the Cold War. Individuals like Vasili Arkhipov and Stanislav Petrov more or less single-handedly averted nuclear holocausts, and an interpretation error in 1995 led Boris Yeltsin to become “the first Russian president to ever have the ‘nuclear suitcase’ open in front of him” (Cirincione 2013). Although intelligence is negatively correlated with accident proneness, and presumably our (post)human descendants will be cognitively enhanced to some extent, even a small probability of error could make disaster almost certain (see Author). For example, imagine that a mere 500 people have access to a “button” that, if pushed, would initiate a catastrophic first strike against the other civilization. If each of these individuals has a mere 0.01 chance per decade of accidentally pushing this button, the result is a staggering 99.3 percent probability that, within 10 years, the strike will

occur. So, perhaps Earth and Mars—whose civilizations could potentially coexist for another 10 million centuries, until the sun burns out—won’t be quite as lucky as the US and Soviet Union were for the slightly more than four decades between 1947 and 1991.

The final step in the present argument is to project this bi-planetary predicament into the vast reaches of outer space. Consider the billions and billions and billions of populations that could come to occupy a universe with 10 trillion galaxies and 1024 stars, each with its own traditions, boasting of weapons that could destroy entire galaxies or even the entire universe, and embedded in a cosmopolitical system of lawless anarchy. There is no supreme governing system to provide security and no policies of deterrence to reliably prevent first strikes. It is hard to imagine how such a predicament could avoid constant and catastrophic wars between civilizations both near and far. Indeed, theorists like Kenneth Waltz (1979) have argued that multipolar state configurations are less stable and more prone to conflict than bipolar configurations. The reason is that uncertainty increases with the number of actors, and as uncertainty increases, so does distrust of everyone else’s intentions. Hence, the more civilizations there are in the universe, the greater the incentive for Tuckerian actors to preventively or preemptively strike their neighbors—or to induce a vacuum bubble in the hope that an “assembler” on the “other side” can enable some form of post-transition survival. The point is that the future will be marked by radical multipolarity, and this will greatly increase the probability of violence. Yet the difficulty of establishing Earth-independent colonies on Mars without catastrophic wars—as outlined above—suggests that our descendants might not make it beyond the solar system. In fact, Deudney (forthcoming) argues that attempts to colonize space could constitute the Great Filter that explains why we see no evidence of intelligent aliens crying out for cosmic companionship in a universe slowly sinking into thermodynamic equilibrium.

Additional Considerations

Before concluding, let’s consider three additional issues that are relevant to the present thesis. First, this paper focuses on one of a few foreseeable space-colonization scenarios. Another possibility, which is endorsed by some scholars at the Future of Humanity Institute (FHI), is that humanity creates a singleton controlled by a friendly superintelligence before we propagate beyond the solar system.xxi I see two problems with this: (i) we will almost certainly establish martian colonies before we leave the solar system and, as subsection 5.2 notes, tensions will likely emerge between martian and earthian civilizations as they become increasingly independent; this could make a joint martian-earthian singleton difficult to establish.xxii And (ii) it is unclear why a superintelligence that facilitates the posthuman colonization of space wouldn’t encounter the same insurmountable challenges that led us to dismiss, in section 4, the feasibility of a “cosmic Leviathan.” How exactly could a superintelligence enforce law and order when physical limitations like the speed of light severely problematize the coordination of far-away entities? One might try to circumvent this issue by arguing that a singleton could take the form of some immutable software that governs the behavior of all future beings and must be embedded within every technological civilization, spacecraft, and so on. This would overcome the communication chal- lenge associated with the spatial vastness of the universe, since no communication between in- stances of the program would be necessary. Yet this too seems problematic. Consider that if hu- manity spreads beyond the solar system in 100 years, then we will need to have this software in its final form within a century. Doing this would require solving the philosophical problem of de- termining which values should guide all future beings for the rest of time (since the software is immutable, a necessary condition to overcome the communication challenge), as well as the technical problem of ensuring with virtual certainty that this software will remain regulatorily efficacious even after millions of years of unimaginable future development (i.e., it can’t be the case that future breakthroughs enable hackers to disable the software). Perhaps there could be pe- riodical updates to the software, but this brings us back to the formidable question of what cen- tral decision-making body would decide which updates to make, how this body could represent the interests of so many diverse species, and so on. In my view, this proposal does not offer a promising solution to the security problems outlined above.

### Analytics

The risk of such an attack occurring so fast means that governments would be forced to undertake first strike actions, making war all but inevitable once technology develops enough.

### Impact: Any delay to space colonization is immensely desirable

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(<https://www.sciencedirect.com/science/article/pii/S0016328717304056>)

Let’s now return to the topic of section 1, i.e., the astronomical waste argument. According to Bostrom, our first priority is to reduce existential risk, because an existential catastrophe would prevent us from reaching a stable state of technological maturity and technological maturity is necessary to realize astronomical value. Furthermore, to reach technological maturity, we will need to colonize space. It follows that utilitarians (in particular) should prioritize existential risk reduction while also advocating for the colonization of space as soon as possible. Seth Baum (2016) echos this sentiment when he argues that, if one accepts consequentialism, “spacecolonization should proceed with caution, but ultimately should proceed at immense scale.”Yet a closer look at what I have argued are the most probable results of colonizing the “last great frontier” suggests that doing so would yield a state of Hobbesian “warre” in which civilizations wallow in perpetual anxiety—existential anxiety—when they aren’t actively engaged in confrontations with their neighbors. The argument that I present thus invites a Gestalt switch: rather than peering up at the firmament and pondering how much of our cosmic endowment of negentropy is being lost that could realize some form of positive “value,” one should instead ponder how much negentropy is being lost that could realize an s-risk, or a condition marked by astronomical amounts of pain, misery, dread, fear, and suffering. In a phrase, every second of delayed colonization should be seen as immensely desirable, and the longer the delay, the better. This is not a conclusion that I find particularly appealing, yet I see no obvious flaws in the above arguments.

1. https://dictionary.cambridge.org/us/dictionary/english/appropriation [↑](#footnote-ref-0)
2. https://www.law.cornell.edu/definitions/uscode.php?width=840&height=800&iframe=true&def\_id=6-USC-625312480-168358316&term\_occur=999&term\_src=title:6:chapter:6:subchapter:I:section:1501 [↑](#footnote-ref-1)