# Palm Classic R4 1AC v Midlothian AC

### 1AC: Plan

#### Plan: The appropriation of the planet Mars by private entities is unjust.

#### Current legal regimes fail due to ambiguity, new norms are key.

Collins 08. [David Collins - Lecturer, The City Law School, City University, London, UK. B.A.Hon., J.D.(Toronto), M.Sc., B.C.L. (Oxford)] 25 April 2008. Boston University Journal of Science and Technology Law, vol. 14. “EFFICIENT ALLOCATION OF REAL PROPERTY RIGHTS ON THE PLANET MARS” Accessed 24 December 2021. <<https://www.bu.edu/jostl/files/2015/02/Collins_142.pdf>> //L.Su

Together the space treaties embody the now **widely-criticized notion**27that every human, as represented by the states in which they are members, has an effective “right” to Mars. Under this regime the allocation of Martian resources, possibly including land itself, will be determined by the “administrative model” in which each nation decides the distribution based on each country having an equal vote, much like the current United Nations regime.28 Not surprisingly, the United States and the Soviet Union rejected the limitations on the use of space resources, refusing to sign the Moon Treaty. Indeed **none of the signatories** of the Moon Treaty **has space travel capability**, suggesting that it **does not reflect** any **practical concerns** in space exploration and development. Rather, the Moon Treaty illustrates resistance to the idea of private advancement through the acquisition or use of space resources as expressed through the voting dominance of less-developed nations in intergovernmental organizations.29 Still, as many legal commentators have noted, the benefit sharing doctrines enunciated in the treaties are fortuitously vague and as such have **little force in international law**. At best they are **loose policy guidelines**, **not concrete obligations**.30 Interestingly, the treaties also present inconsistent principles: the Moon Treaty’s common ownership concept contradicts the prohibition against national appropriation found in the Outer Space Treaty,31 although this is little more than a semantic distinction. The ambiguity of these treaties and the fact that the Moon Treaty has not been ratified by space-faring nations suggests that property law in space remains, hopefully for the purpose of incentivization, clouded. Many commentators, notably Carl W. Christol, further assert the need to clarify and formalize the law of space exploration generally.32 An internationally recognized legal regime for property rights on Mars is essential; otherwise uncertainty (if not the fear of expropriation in the name of mankind) will endanger financial investment both in reaching and then colonizing the planet.

### Adv 1: Colonization

#### **SpaceX plans to reach Mars in five years.**

Luscombe 12/20. [Richard Luscombe is a freelance correspondent based in Miami, Florida. Twitter @richlusc] 20 December 2021. The Guardian. “SpaceX’s towering Starship aims to get humans to Mars” Accessed 23 December 2021. <https://www.theguardian.com/technology/2021/dec/20/spacex-starship-humans-moon-next-year> //L. Su

Next month, however, or perhaps a few weeks beyond if the attendant gremlins of spaceflight choose to play with the launch schedule, could come an achievement to surpass anything Musk has done before. The first orbital test launch of the largest and most powerful rocket ship ever to leave Earth – SpaceX’s towering Starship, from its Starbase headquarters in Texas – is seen by many as a pathway back to the moon for the first time in half a century and maybe the first vehicle to eventually land humans on Mars. The project that began life in Musk’s overactive mind more than a decade ago is every bit as ambitious as his pronouncement this week that: “I’ll be surprised if we’re not landing **on** **Mars within five years**.” Starship will be the first spacecraft in which all components are fully reusable, reducing significantly the traditionally astronomic costs of space travel. It has an unprecedented in-flight refueling capacity, allowing for more frequent and efficient operations. As the visionary behind the return to human spaceflight from US soil last year for the first time since the retirement of Nasa’s shuttle fleet in 2011, Musk, 50, is confident that his 395ft (120m) spacecraft, a full 32ft taller than the Apollo-era Saturn V, can deliver. Time magazine, in honoring the billionaire entrepreneur, appeared to acknowledge that humankind’s greatest achievements come from unorthodox minds. Musk, it said, is “a madcap hybrid of Thomas Edison, PT Barnum, Andrew Carnegie and Watchmen’s Doctor Manhattan, the brooding, blue-skinned man-god who invents electric cars and moves to Mars.” Sean O’Keefe, a former head of Nasa, said Musk had repeatedly challenged the traditional rules of spaceflight with great success. “One of the things that [he] has artfully figured out how to do is, whenever there has been any doubt about his ability to accomplish something, in some period of time thereafter, he has focused his attention, expertise and talent to go out and demonstrate that you can do it,” O’Keefe, professor of strategic management and leadership at Syracuse University, told the Guardian. “And that’s what this is. It is going to be interesting to see where this goes. [Starship] provides options, very significant options. “To look at, for example, the lunar surface as being not only reachable by multiple means but also by commercial sources that can do the regular resupply and so forth, will be extremely beneficial.” Starship will be propelled into orbit by a first-stage booster rocket called Super Heavy, to which SpaceX attached 29 of its Raptor engines before sending the entire craft to the launchpad at its Starbase launchpad this week. With about 16m pounds of thrust, and a capacity to lift up to 165 tons from the Earth’s surface, Starship is almost twice as powerful as the Saturn V rockets that sent 12 astronauts to the moon between 1969 and 1972. Two Starships now stand inside the SpaceX build site in South Texas. Two Starships now stand inside the SpaceX build site in South Texas. Photograph: Reginald Mathalone/NurPhoto/REX/ Shutterstock “You can really take advantage of the Starship architecture and get to the outer solar system in ways we haven’t thought about before,” Jennifer Heldmann, a planetary scientist at Nasa’s Ames research center in California, told Arstechnica. “It could provide a revolutionary new way of exploring these worlds.” Other innovative and speculative uses have been proposed for the new spacecraft, including asteroid-busting missions to protect Earth. Musk, though, has made no secret of his ambitions to reach the moon and one day colonize Mars to make humans a **multi-planetary species**. “The next really big thing is to build a self-sustaining city on Mars and bring the animals and creatures of Earth there,” he told Time. “Sort of like a futuristic Noah’s ark. We’ll bring more than two, though, it’s a little weird if there’s only two.”

#### **Ambiguities written into the OST greenlight the creation of private settlements on Mars.**

Haskins 18. [Caroline Haskins] 15 March 2018. The Outline. “THE LEGAL BATTLE TO COLONIZE MARS” Accessed 28 December 2021. <https://theoutline.com/post/3739/mars-colony-settlement-spacex-elon-musk-trump> //L. Su

So if Musk were to establish a private Martian settlement, that settlement would be an (illegal) territory of the United States. But to a figure like Trump, who recently established the National Space Council and an agenda to support private space commerce, the prospect of a private Martian settlement may be appealing. And there’s ample precedent for the U.S. ignoring treaties that are inconvenient to its national interests. In fact, according to Dodge, the Cold-War-era Outer Space Treaty was written to be ambiguous and open to interpretation. “I think that [The Outer Space Treaty] was written that way purposefully to get some disparate factions — especially the U.S.S.R. and U.S.A., who were ideologically, of course, quite opposed at the time — to the same table,” Dodge said. But today, according to Listner, this ambiguity could give nations like the U.S. wiggle room to manipulate the treaty's meaning. “When it comes to the Outer Space Treaty, it’s about what we want it to say versus what it really does say,” Listner said. “I think if we really, really wanted [space colonization], we’re going to take a position that the Outer Space Treaty legally justifies it, even if it doesn’t. We’re going to make it say what we want it to say, even if it doesn’t say it.” However, it’s worth noting that the U.S. would face consequences for anything that went wrong during a mission. John Rummel, a Senior Scientist at the Search for Extraterrestrial Life Institute, said that the biological risks alone to Martian astronauts could be significant. “You don’t know if there is life on Mars, or literal viruses left over from life on Mars, or ancient viruses that are actually leftover from life on Earth that get transported there by an asteroid impact,” Rummel said. And according to Listner, every potential risk involves a heavy political calculus when the U.S. considers authorizing a potential SpaceX launch to Mars. “Mars will kill you very easily, so if that happened under the U.S. government’s watch, the blowback is going to be significant,” Listner said. “If colonists die, which they probably will, regrettably people will use that as a geopolitical tool to beat on the United States and make us look bad in the eyes of the world.” Let’s say the U.S. authorizes Musk’s launch to Mars, and the astronauts survive. The territory may be open to other astronauts who can make it to Mars, at least at first. That scenario opens up a whole new slew of political problems. After all, Musk has explicitly stated that he intends for his colony to be an independent city-state, complete with direct democracy and his own laws. According to Dodge, it’s possible that several decades from now, a Martian colony could not be so dependent on Earthly resources, like water and oxygen. “It’s conceivable to think that eventually a new government or a new political entity could be developed on another celestial body,” he said. “It’s not necessarily just the stuff of science fiction.” But would Musk’s idea of a direct democracy make sense on Mars? Rhetorically, Musk has characterized a Martian government with a direct democracy as a more pure form of democracy. But according to Daniel Smith, chair and professor of the University of Florida’s political science program who has written about direct democracy, that system of government isn’t necessarily more pure, nor is it easy to implement. “I suspect that it’s actually easier to make it to Mars and set up critical infrastructure than it is to establish a system of direct democracy on the red planet,” Smith said. “From a practical standpoint, direct democracy is not terribly efficient.” An artist's depiction of a Martian astronaut. An artist's depiction of a Martian astronaut. Wikimedia Commons/Pat Rawlings Smith said it’s unrealistic to think that every single citizen will have the time to properly research and be completely informed about every issue—even if Musk hopes to solve this issue by avoiding “long laws.” Smith also noted that in the U.S., direct democracy typically takes the form of ballot measures, which can easily be manipulated. For instance, in 2013, Silicon Valley investor Tim Draper paid to try and pass a ballot measure that would have split California into six separate states. That ballot didn’t pass. But in a theoretical Martian settlement founded by SpaceX and supported by commercial space companies hoping to make a profit, it’s difficult to say that money wouldn’t influence the way city-state direct democracy would work. Representatives for SpaceX did not respond for comment. Even under existing laws, space is vulnerable to the will of private companies. The Outer Space Treaty states, “The exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind.” However, “benefit” and “interest” are not specifically defined. Henry Hertzfeld, a professor of space policy at The George Washington University, said it’s not evident that the term “province of mankind” protects the Martian environment at all. “The bottom line is that there’s nothing in [international] treaties to prohibit private activity in space,” Hertzfeld said. It’s very possible that Musk never makes it to Mars. But heavily-funded companies such as Lockheed Martin will be more than eager to step in over the next several decades. According to Dodge, this immutable human will to go to Mars means that we need to examine our reasons for wanting to do so. “Some of the questions we have to ask ourselves are why do we want to do it in the first place?” Dodge said. “Is it just flashiness, or is it because we want to engage in scientific information? Is it for our profitability?”

#### A Martian colony would inevitably become authoritarian – lack of state oversight means exploitation can’t be checked.

Spencer 17. [Keith A. Spencer is a senior editor at Salon who edits Salon's science/health vertical. His book, "A People's History of Silicon Valley: How the Tech Industry Exploits Workers, Erodes Privacy and Undermines Democracy," was released in 2018.] 8 October 2017. Salon. “Against Mars-a-Lago: Why SpaceX's Mars colonization plan should terrify you.” Accessed 24 December 2021. <https://www.salon.com/2017/10/08/against-mars-a-lago-why-spacexs-mars-colonization-plan-should-terrify-you/> //L. Su

Democracy as we know it was considered an advance over feudalism because of the power that it gave the commoners to share in collective governance. To privately colonize a nation, much less a planet, means ceding governance and control back to corporations whose interest is not ours, and indeed, is always at odds with workers and residents — particularly in a resource-limited environment like a spaceship or the red planet. Even if, as Musk suggests, a private foundation is put in charge of running the show on Mars, their interests will inherently be at odds with the workers and employees involved. After all, a private foundation is not a democracy; and as major philanthropic organizations like the Bill and Melinda Gates Foundation illustrate, often do the bidding of their rich donors, and take an important role in ripening industries and regions for exploitation by Western corporations. Yet Mars’ colonization is a bit different than Bengal, namely in that it is not merely underdeveloped; it is undeveloped. How do you start an entirely new economy on a virgin world with no industry? After all, Martian resource extraction and trade with Earth is not feasible; the cost of transporting material across the solar system is astronomical, and there are no obvious minerals on Mars that we don’t already have in abundance on Earth. The only basis for colonization of Mars that Musk can conceive of is one based on tourism: the rich pay an amount — Musk quotes the ticket price at $200,000 if he can get 1 million tourists to pay that — that entitles them to a round-trip ticket. And while they’re on Mars and traveling to it, they luxuriate: Musk has assured that the trip would be “fun.” This is what makes Musk’s Mars vision so different than, say, the Apollo missions or the International Space Station. This isn’t really exploration for humanity’s sake — there’s not that much science assumed here, as there was in the Moon missions. Musk wants to build the ultimate luxury package, exclusively for the richest among us. Musk isn’t trying to build something akin to Matt Damon’s spartan research base in "The Martian." He wants to build Mars-a-Lago. And an economy based on tourism, particularly high-end tourism, needs employees — even if a high degree of automation is assumed. And as I’ve written about before, that means a lot of labor at the lowest cost possible. Imagine signing away years of your life to be a housekeeper in the Mars-a-Lago hotel, with your communications, water, food, energy usage, even oxygen tightly managed by your employer, and no government to file a grievance to if your employer cuts your wages, harasses you, cuts off your oxygen. Where would Mars-a-Lago's employees turn if their rights were impinged upon? Oh wait, this planet is run privately? You have no rights. Musk's vision for Mars colonization is inherently authoritarian. The potential for the existence of the employees of the Martian tourism industry to slip into something resembling indentured servitude, even slavery, cannot be underestimated. We have government regulations for a reason on Earth — to protect us from the fresh horror Musk hopes to export to Mars. If he's considered these questions, he doesn't seem to care; for Musk, the devil's in the technological and financial details. The social and political are pretty uninteresting to him. This is unsurprising; accounts from those who have worked closely with him hint that he, like many CEOs, may be a sociopath. Even as a space enthusiast, I cannot get excited about the private colonization of Mars. You shouldn’t be either. This is not a giant leap for mankind; this is the next great leap in plutocracy. The mere notion that global wealth is so unevenly distributed that a small but sufficient sum of rich people could afford this trip is unsettling, indicative of the era of astonishing economic inequality in which we suffer.

#### **A Martian legal system led by private entities will differ significantly from the state-led system on Earth.**

Joshi 10/3. [Prateek Raj Joshi is a project intern at UNESCO. They’re an experienced Writer with a demonstrated history of working in the writing and editing industry. Extremely interested for working in fields related to International Relations and Diplomacy] 3 October 2021. E-International Relations. “The Possible Martian Order: Extension or Rejection of Earth’s Systems?” Accessed 28 December 2021. <https://www.e-ir.info/2021/10/03/the-possible-martian-order-extension-or-rejection-of-earths-systems/> // L. Su

In terms of Mars, the space race that was initiated during the cold war between two governments of the U.S. and the U.S.S.R. has entirely transformed into a private race. After the private companies entered the domain of the space race, humans have achieved a significantly greater leap forward due to their sophisticated technology and vigorous attitude of private firms. Furthermore, the **competition of these private enterprises against each other** and even against the governmental entities has helped them almost **supplant the role and power of states and governments**. Their contribution in creating non-governmental space exploration is due to the private passion for “private space exploration,” which addresses numerous hindrances present when government-funded agencies carried out the same missions. “The new environment for private space companies were never so vigorous comprising by events like the rise of new visionary investors, changes in the government space policies, global economy, and the increasing concerns about the limited resources and, space debris” (Gomes et al., 2013, p. 4). Based on this, one can undoubtedly state that rather than states, private entities would be the ones colonizing Mars. These **entities would, without a doubt, assert their ownership on the Martian territory, making them essential actors in charting the political or legal system of Mars**. As a result, the multinational corporations and private agencies would demand increasing power in their recognition as important actors in the formation of Martian Law. For instance, Elon Musk, who is considered the tech tycoon having an extremely ambitious yet plausible plan of colonizing Mars through SpaceX, believes that his company would be making its own laws on Mars, **disregarding any universal ones**. The CEO of Tesla and SpaceX was reported saying, “SpaceX will not be recognizing any international law on Mars and will instead follow a set of “self-governing principles” that will be laid down during the Martian settlement” (“Elon Musk’s SpaceX…”, 2020). While SpaceX has been comparatively more successful in fulfilling its promise of advancing to Mars, these statements blatantly elucidate that the private entities are not in the mood to settle with the same status as they have on the Earth. As a result, unlike Earth, privately-owned space agencies may be the major actors with a strong influence in charting, executing, and governing the Martian Law. **This would question the entire state-centric system**, and the Martian Sphere would not just have state sovereignty but might also practice the concept of private sovereignty. Conclusion The difference in the evolutionary process and the variation regarding humans’ social procedure and actions in the two planets result in a different set of ontologies and epistemologies for Earthlings vs. the Martians. This primary change is in the formation of **societal structure, which ultimately influences a significant deviation of the Martian System** compared to the Earth’s System. Furthermore, the emergence and rising contribution of private entities in Mars exploration have raised an unprecedented question of private sovereignty. There is a high probability of states and private entities existing hand-in-hand; however, unlike Earth, both need to be considered equally important and influential. Similarly, the chance to formulate a new political system in a vacuum would provide immense opportunity for the critical theorists to exercise their ideologies resulting in a weakened western philosophy. All in all, establishing a colony on the Red Planet seem to be a domain in which ample research regarding installing a legal and political system seems to be lacking. Inspecting the idea of forming a new colony on Mars and contemplating on the Martian International system may be a vague approach; however, this paper compares how different the Mar’s political system might be when compared with that of the Earth, backing them up with different theories of international relations and their interpretations.

#### Conflict between Earth and Mars causes extinction—space weapons make credible deterrence impossible.

Torres 18. [Phil Torres @ Project for Future Human Flourishing, 849 South 7th St., Apt. 4A, Philadelphia, PA, 19147, United States] 2018. Futures, vol. 100, pp. 74-85. “Space colonization and suffering risks: Reassessing the “maxipok rule.”” Accessed 25 December 2021. <https://www.sciencedirect.com/science/article/abs/pii/S0016328717304056> // L. Su, bracketed for ableist language [Full Version](https://drive.google.com/file/d/1Mrmv4rtoMKIYRkW4sROhaLmKmvMVW_Ma/view?usp=sharing)

DEW = directed energy weapon

With this brief sketch of space weaponry in mind, let’s consider the deterrence predicament beginning with the colonization of Mars and expanding outward from there. As colonies on 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 phenotype modifications. (The same goes for populations on Earth.) As Deudney (forthcoming) notes, geopolitical 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~~ [destroy] 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-ofdeterrence 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 lightspeed. In a flash, one civilization could cripple the other’s key military and/or civilian infrastructure, 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 earlywarning systems to alert the target civilization that an attack has commenced**, which would severely 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 10^24 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.xx

#### Plans to terraform Mars using nuclear weapons are seen as a guise for military operations – perceptions alone trigger Russia war.

Ekimenko 21. [Svetlana Ekimenko Svetlana Ekimenko is a Moscow-based Sputnik correspondent specialising in foreign affairs, social issues and science. Previously worked as host for live broadcasts of Radio Sputnik.] 29 August 2021. Sputnik International. “Russia's Space Chief Warns Pentagon May Use Musk's 'Terraform Mars' Idea to Deploy Nuclear Weapons” Accessed 28 January 2022. <https://sputniknews.com/20210829/russias-space-chief-warns-pentagon-may-use-musks-terraform-mars-idea-to-deploy-nuclear-weapons-1083745870.html> //L. Su

After the US announced the delimitation of space as a warfighting domain, several NATO powers inaugurated a separate space command, with the heads of state of the aforementioned pointing to the increasing space capabilities of Russia, China, and India, who have all denied any intent to militarise space or “base any type of weapons in space". Roscosmos head Dmitry Rogozin has warned that the **US might attempt to install nuclear weapons in space under the pretext of terraforming Mars**. One of the Mars-colonisation concepts, terraforming is the hypothetical process of changing the conditions on a planet to make it habitable for life that exists on Earth, including humans. "Nuclear weapons can be launched into space not under the pretext of attacking a hostile adversary, but under some favourable pretext like, for example, terraforming Mars, or within the framework of safeguarding our planet from an asteroid attack", Rogozin said in an interview with Gazeta.ru. The Russian space chief weighed in on the dangers of the militarisation of space. He underscored that he was not referring to intercontinental ballistic missiles (ICBM) designed for nuclear weapons delivery (which Russia, the United States, China, France, India, the United Kingdom, and North Korea have), which are in actual space for just minutes. **It was the actual permanent deployment of space-based weapons that Russia is categorically against**. The dominant treaty governing space law is the **1967 Outer Space Treaty (OST) that bans the stationing of weapons of mass destruction (WMD) in outer space**, prohibits military activities on celestial bodies, and details legally binding rules governing the peaceful exploration and use of space. SpaceX Rogozin emphasised that **he considers the possible permanent deployment of nuclear weapons in space a crime.** "I believe that it would be a crime. That is why (and some have criticised me for this) I objected to Elon Musk when he proposed terraforming Mars using nuclear weapons", said the head of the state space corporation. Musk first espoused the theory in 2015, suggesting detonating nuclear bombs at Mars’ poles to terraform the red planet, making it liveable for humans by heating it with greenhouse gases. ​Currently, Elon Musk’s SpaceX, designed for flights to the Moon and Mars, can be used in the interests of the Pentagon for intercontinental transfer of special forces, speculated Dmitry Rogozin. "The new developments that Musk is implementing are all related to the Pentagon”, he insisted. Super Heavy is the first stage of Starship, a fully reusable, two-stage transportation system that SpaceX is developing to carry people and cargo to the Moon, Mars, and other distant destinations. The National Aeronautics and Space Administration (NASA) recently selected Starship as the crewed lander for its Artemis Programme, seeking to establish a sustainable human presence on the Moon by the end of the 2020s. SpaceX will soon start subjecting its Booster 4 at its Starbase site to a series of pressurisation and engine trials, pending which the rocket will be poised for an orbital launch attempt within months, according to the company. Rogozin went on to say that one recent idea that was immediately supported by enthusiasts is the “intercontinental super-fast transportation of people". The Roscosmos chief dismissed the “fantastic” idea as potentially feasible in the distant future only for transferring people specially trained to withstand the overload from one continent to another. However, he predicted that when such technologies are up and running, they will hardly be used for “simply granting mankind the ability to fly across the ocean in a matter of minutes". Space as a ‘Warfighting Domain’ Rogozin dismissed as propaganda Washington’s accusations that Russia was developing anti-satellite technology. Recently, the Defence Department rolled out America’s new Defence Space Strategy which, in particular, alleged that China and Russia “present the most immediate and serious threats to US space operations”. Capitalising on these assertions, the US delimitated space as a warfighting domain in need of a separate branch of the armed forces, establishing a US Space Command. It was claimed that the development of anti-satellite (ASAT) missiles and directed-energy weapons had “imperiled US satellites like never before”. In response, Kremlin spokesman Dmitry Peskov emphasised that Russia has always been and remains committed to the full demilitarisation of space**. If we talk about the wars of the future** and the forecasts given by analysts, **a distantly-potential war might begin in space**, according to Rogozin. However, he sought to allay fears, saying **Russia was geared to repel any attack from an enemy force**. "Russia has gone through so many wars, experienced colossal losses, so we are certainly ready to repel any attack, **including in outer space**", said Roscosmos CEO.

#### US-Russia nuclear war causes extinction.

**Starr 15.** Steven Starr, 8-14-2015, "Nuclear War, Nuclear Winter, and Human Extinction," Federation Of American Scientists, <https://fas.org/pir-pubs/nuclear-war-nuclear-winter-and-human-extinction/> ccajs

While it is impossible to precisely predict all the human impacts that would result from a nuclear winter, it is relatively simple to predict those which would be most profound. That is, a nuclear winter would cause most humans and large animals to die from nuclear famine in a mass extinction event similar to the one that wiped out the dinosaurs. Following the detonation (in conflict) of US and/or Russian launch-ready strategic nuclear weapons, nuclear firestorms would burn simultaneously over a total land surface area of many thousands or tens of thousands of square miles. These mass fires, many of which would rage over large cities and industrial areas, would release many tens of millions of tons of black carbon soot and smoke (up to 180 million tons, according to peer-reviewed studies), which would rise rapidly above cloud level and into the stratosphere. [For an explanation of the calculation of smoke emissions, see Atmospheric effects & societal consequences of regional scale nuclear conflicts.] The scientists who completed the most recent peer-reviewed studies on nuclear winter discovered that the sunlight would heat the smoke, producing a self-lofting effect that would not only aid the rise of the smoke into the stratosphere (above cloud level, where it could not be rained out), but act to keep the smoke in the stratosphere for 10 years or more. The longevity of the smoke layer would act to greatly increase the severity of its effects upon the biosphere. Once in the stratosphere, the smoke (predicted to be produced by a range of strategic nuclear wars) would rapidly engulf the Earth and form a dense stratospheric smoke layer. The smoke from a war fought with strategic nuclear weapons would quickly prevent up to 70% of sunlight from reaching the surface of the Northern Hemisphere and 35% of sunlight from reaching the surface of the Southern Hemisphere. Such an enormous loss of warming sunlight would produce Ice Age weather conditions on Earth in a matter of weeks. For a period of 1-3 years following the war, temperatures would fall below freezing every day in the central agricultural zones of North America and Eurasia. [For an explanation of nuclear winter, see Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences.] Nuclear winter would cause average global surface temperatures to become colder than they were at the height of the last Ice Age. Such extreme cold would eliminate growing seasons for many years, probably for a decade or longer. Can you imagine a winter that lasts for ten years? The results of such a scenario are obvious. Temperatures would be much too cold to grow food, and they would remain this way long enough to cause most humans and animals to starve to death. Global nuclear famine would ensue in a setting in which the infrastructure of the combatant nations has been totally destroyed, resulting in massive amounts of chemical and radioactive toxins being released into the biosphere. We don’t need a sophisticated study to tell us that no food and Ice Age temperatures for a decade would kill most people and animals on the planet. Would the few remaining survivors be able to survive in a radioactive, toxic environment?

### Adv 2: Warming

#### Musk plans build one thousand Starships and launch three every day within the next 30 years.

McFall-Johnson/Mosher 20. [Morgan is a science reporter at Insider, covering all things space, climate, and infectious disease. Morgan writes about the science and commercialization of space: everything from satellite constellations to gravitational waves to the search for alien life. She has reported extensively on the coronavirus pandemic, starting with inside accounts of the first cruise-ship outbreaks. Her work also extends into climate change and extreme weather. In the months of late summer and fall, you can find her trawling hurricane and wildfire updates. Morgan holds a Bachelor of Science in Journalism from Northwestern University, where she also studied environmental policy and French. She first joined Business Insider as a science-reporting fellow in July 2019. Dave Mosher reported news and features stories about science and technology for Insider, with human and robotic spaceflight as the primary focus of his multimedia storytelling. Mosher joined Insider in April 2015 as a deputy editor to help launch Tech Insider and manage its science desk. He left the company in February 2021. Prior to being an Insider, Mosher directed Popular Science's website, was a Wired contributor, and worked for or with Scientific American, Popular Mechanics, Discover, Space.com, National Geographic News, Discovery Channel, Nature, Science, and other media outlets.] 17 January 2020. Insider. “Elon Musk says he plans to send 1 million people to Mars by 2050 by launching 3 Starship rockets every day and creating 'a lot of jobs' on the red planet” Accessed 16 January 2022. <https://www.businessinsider.com/elon-musk-plans-1-million-people-to-mars-by-2050-2020-1> //L.Su

In a series of tweets on Thursday, Elon Musk revealed new details about his plan to build a city of 1 million people on Mars by 2050. Musk said he hoped to build 1,000 Starships — the towering and ostensibly fully reusable spaceship that SpaceX is developing in South Texas — over 10 years. That's 100 Starships per year. Eventually, Musk added, the goal is to launch an average of three Starships per day and make the trip to Mars available to anybody. "Needs to be such that anyone can go if they want, with loans available for those who don't have money," Musk wrote. Not enough to convince you to leave Earth behind? "There will be a lot of jobs on Mars!" he added. Fleets of Starships to make humans multiplanetary. Starship, if realized as designed, would be the most powerful launch system ever created; each launch would pack enough thrust to send more than 100 tons (about seven fully loaded school buses' worth of mass) and 100 people into orbit at a time. Musk didn't specify what exactly the rockets would need to carry to Mars, but a lot of food, water, building materials, tools, and advanced life-support systems are a given. Thus, he estimated he would need a whole fleet of Starships to build a permanent settlement.

#### Rocket fuel gets released directly into the upper atmosphere—that causes significant warming.

Ebbs 12/9. [Stephanie Ebbs is a reporter/producer at ABC News Climate Unit, Washington, District of Columbia, United States] 9 December 2021. ABC News. “Experts say climate impact is a question mark if space tourism takes off” Accessed 16 January 2022. <https://abcnews.go.com/Technology/experts-climate-impacts-question-mark-space-tourism-takes/story?id=81609878> //L. Su

That “space tourism” could add hundreds more rocket launches to the mix each year as companies like Virgin Galactic say they plan to expand flights to hundreds a year, and experts say those launches could generate more greenhouse gases amid the battle against global warming. One model published in the American Geophysical Union magazine found that 400 space flights per year over 40 years would generate enough greenhouse gas emissions to cause up to 1°C more warming in the Arctic than is already projected. “When you get to that kind of change, those are the kinds of changes that we worry about when it comes to impacts of climate change in general from other human emissions at the surface like CO2,” said Darin Toohey, a professor of atmospheric science at the University of Colorado- Boulder and one of the authors of the study. There isn’t a lot of research about the impact of space tourism on the environment, but Toohey says experts can make some estimates based on the type of fuel the rockets use and what happens when that fuel is burned. Toohey says he is especially concerned about carbon-based fuels like the ones used by SpaceX and Virgin Galactic because they generate soot or “black carbon” when they’re burned. Toohey said black carbon has the potential to be really problematic because it reflects sunlight and could amplify warming in the upper levels of the atmosphere. “If you look at kilogram per kilogram, the black carbon is between 100,000 and a million times more effective at heating the upper atmosphere,” he told ABC News. Representatives for Virgin Galactic and SpaceX did not respond to requests for comment. Blue Origin says the rocket taking the New Shepard capsule into space is fueled by liquid oxygen and hydrogen. The company says that during flight, the only byproduct of New Shepard’s engine combustion is water vapor with no carbon emissions. Eloise Marais, a professor of geography at University College London, said water vapor can still contribute to warming the atmosphere. ”It’s not doing nothing up there. [Water vapor] can also actually contribute to the formation of clouds in the upper atmosphere where clouds are quite rare and clouds, also, unfortunately, have climate impacts. They change how much sun is reflected or reaches the surface of the earth,” she said. “So there's all these sort of complexities to consider in something like water vapor that sounds so innocuous.” "Good Morning America" co-anchor Michael Strahan is scheduled to participate in Saturday’s expected Blue Origin launch. Blue Origin's rocket New Shepard blasts off carrying Star Trek actor William Shatner, 90... Marais added that all types of space travel will generate nitrogen oxides, or NOx, from the high temperatures needed to re-enter the atmosphere. NOx are 300 times more potent than carbon dioxide at warming the atmosphere, according to the EPA. While researchers have begun to look into the impacts of rocket launches from private companies, it’s hard to estimate the impact on the climate without knowing how many flights there will be. Virgin Galactic has said the company hopes to launch 400 flights a year. Blue Origin and SpaceX have not indicated how many launches they hope to execute. But Marais said even if the industry is much smaller than commercial air travel, for example, there’s a big difference in that rockets fly at a higher altitude and release pollution directly into multiple layers of the atmosphere. “I think the huge difference that we have to take into account is the direct injection of these pollutants into multiple layers in the atmosphere and the impact that that has is completely different to aircraft which tend to fly, roughly, 10 to 12 kilometers depending on what kind of flight you’re taking, and that's that is really what separates them substantially,” she said. Marais and Toohey said more studies are needed to understand the consequences of space tourism. “I think the potential impacts are, I think too uncertain and too potentially hazardous to be able to gamble with just sort of this unregulated industry,” Marais said. Until data is available, they said, it will be difficult to advise policymakers on the best way to regulate space travel and its impact on the climate.

#### Climate change is linear – any reduction of emissions is necessary to limit immense suffering.

Wallace-Wells 19. [David Wallace Wells is an American journalist known for his writings on climate change. He wrote the 2017 essay "The Uninhabitable Earth", which he later expanded into the 2019 book The Uninhabitable Earth.] 4 February 2019. NYMag. “The Cautious Case for Climate Optimism Believing in a comfortable future for our planet probably means some giant carbon-sucking machines.” Accessed 29 October 2020. <<https://nymag.com/intelligencer/2019/02/book-excerpt-the-uninhabitable-earth-david-wallace-wells.html>> Santa Monica RE // Recut L. Su

It’s not too late. In fact, it never will be. Whatever you may have read over the past year — as extreme weather brought a global heat wave and unprecedented wildfires burned through 1.6 million California acres and newspaper headlines declared, “Climate Change Is Here” — global warming is not binary. It is not a matter of “yes” or “no,” not a question of “fucked” or “not.” Instead, it is a problem that gets worse over time the longer we produce greenhouse gas, and can be made better if we choose to stop. Which means that no matter how hot it gets, no matter how fully climate change transforms the planet and the way we live on it, it will always be the case that the next decade could contain more warming, and more suffering, or less warming and less suffering. Just how much is up to us, and always will be.  A century and a half after the greenhouse effect was first identified, and a few decades since climate denial and misinformation began muddying our sense of what scientists do know, we are left with a set of predictions that can appear falsifiable — about global temperatures and sea-level rise and even hurricane frequency and wildfire volume. And there are, it is true, feedback loops in the climate system that we do not yet perfectly understand and dynamic processes that remain mysterious. But to the extent that we live today under clouds of uncertainty about the future of climate change, those clouds are, overwhelmingly, not projections of collective ignorance about the natural world but of blindness about the human one, and they can be dispersed by human action. The question of how bad things will get is not, actually, a test of the science; it is a bet on human activity. How much will we do to forestall disaster and how quickly?  These are the disconcerting, contradictory lessons of global warming, which counsels both human humility and human grandiosity, each drawn from the same perception of peril. There’s a name for those who hold the fate of the world in their hands, as we do — gods. But for the moment, at least, many of us seem inclined to run from that responsibility rather than embrace it. Or even admit we see it, though it sits in front of us as plainly as a steering wheel. That climate change is all-enveloping means that it targets us all and that we must all share in the responsibility so we do not all share in the suffering — at least not share in so suffocatingly much of it.   Since I first began writing about climate a few years ago, I’ve been asked often whether I see any reason for optimism. The thing is, I am optimistic. But optimism is always a matter of perspective, and mine is this: No one wants to believe disaster is coming, but those who look, do. At about two degrees Celsius of warming, just one degree north of where we are today, some of the planet’s ice sheets are expected to begin their collapse, eventually bringing, over centuries, perhaps as much as 50 feet of sea-level rise. In the meantime, major cities in the equatorial band of the planet will become unlivable. There will be, it has been estimated, 32 times as many extreme heat waves in India, and even in the northern latitudes, heat waves will kill thousands each summer. Given only conventional methods of decarbonization (replacing dirty-energy sources like coal and oil with clean ones like wind and solar**), this is probably our best-case scenario**. It is also what is called — so often nowadays the phrase numbs the lips — “catastrophic warming.” A representative from the Marshall Islands spoke for many of the world’s island nations when he used another word to describe the meaning of **two degrees: genocide**.  You do not need to contemplate worst-case scenarios to be alarmed; this best-case scenario is alarming enough. Two degrees would be terrible, but it’s better than three, at which point Southern Europe would be in permanent drought, African droughts would last five years on average, and the areas burned annually by wildfires in the United States could quadruple, or worse, from last year’s million-plus acres. And three degrees is much better than four, at which point six natural disasters could strike a single community simultaneously; **the number** **of climate refugees, already in the millions, could grow tenfold, or 20-fold, or more**; and, globally, damages from warming could reach $600 trillion — about double all the wealth that exists in the world today. We are on track for more warming still — just above four degrees by 2100, the U.N. estimates. So if optimism is always a matter of perspective, the possibility of four degrees shapes mine.

#### Warming threatens extinction and magnifies every other existential risk

Phil Torres 16, Affiliate Scholar at the Institute for Ethics and Emerging Technologies, and founder of the X-Risks Institute, 7/22/16, “Op-ed: Climate Change Is the Most Urgent Existential Risk,” <https://futureoflife.org/2016/07/22/climate-change-is-the-most-urgent-existential-risk/>

Climate change and biodiversity loss may pose the **most immediate and important threat to human survival** given their indirect effects on other risk scenarios. Humanity faces a number of formidable challenges this century. Threats to our collective survival stem from asteroids and comets, supervolcanoes, **global pandemics**, **climate change**, **biodiversity** loss, **nuclear weapons**, biotechnology, synthetic biology, nanotechnology, and artificial superintelligence. With such threats in mind, an informal survey conducted by the Future of Humanity Institute placed the probability of human extinction this century at 19%. To put this in perspective, it means that the average American is more than a thousand times more likely to die in a human extinction event than a plane crash.\* So, given limited resources, which risks should we prioritize? Many intellectual leaders, including Elon Musk, Stephen Hawking, and Bill Gates, have suggested that artificial superintelligence constitutes one of the most significant risks to humanity. And this may be correct in the long-term. But I would argue that two other risks, namely climate change and biodiveristy loss, should take priority right now over every other known threat. Why? Because these ongoing catastrophes in slow-motion will **frame our existential predicament** on Earth not just for the rest of this century, but for literally thousands of years to come. As such, they have the capacity to **raise or lower the probability of other risks** scenarios unfolding. Multiplying Threats Ask yourself the following: are wars more or less likely in a world marked by extreme weather events, megadroughts, food supply disruptions, and sea-level rise? Are **terrorist attacks** more or less likely in a world beset by the **collapse of global ecosystems**, agricultural failures, economic uncertainty, and political instability? Both government officials and scientists agree that the answer is “more likely.” For example, the current Director of the CIA, John Brennan, recently identified “the impact of climate change” as one of the “deeper causes of this rising instability” in countries like Syria, Iraq, Yemen, Libya, and Ukraine. Similarly, the former Secretary of Defense, Chuck Hagel, has described climate change as a “threat multiplier” with “the potential to exacerbate many of the challenges we are dealing with today — from infectious disease to terrorism.” The Department of Defense has also affirmed a connection. In a 2015 report, it states, “Global climate change will aggravate problems such as poverty, social tensions, environmental degradation, ineffectual leadership and weak political institutions that threaten stability in a number of countries.” Scientific studies have further shown a connection between the environmental crisis and violent conflicts. For example, a 2015 paper in the Proceedings of the National Academy of Sciences argues that climate change was a causal factor behind the record-breaking 2007-2010 drought in Syria. This drought led to a mass migration of farmers into urban centers, which fueled the 2011 Syrian civil war. Some observers, including myself, have suggested that **this struggle could be the beginning of World War III**, given the complex tangle of international involvement and overlapping interests. The study’s conclusion is also significant because the Syrian civil war was the Petri dish in which the Islamic State consolidated its forces, later emerging as the largest and most powerful terrorist organization in human history.

#### Colonization makes extinction on Earth more likely – multiple scenarios.

Morton 18. [Adam Morton is a retired philosopher attached to the University of British Columbia. He is a philosophical generalist with a particular interest in issues about knowledge and about how people understand one another.] 22 November 2018. Newsweek. “Colonizing Other Planets Could Trigger War on Earth Opinion” Accessed 28 December 2021. <<https://www.newsweek.com/colonizing-other-planets-could-trigger-war-earth-and-ecological-disaster-1226630>> //L. Su

One danger is nuclear and biological war: One nation or ethnic group fears or hates another enough to unleash bombs or viruses. In a bad scenario they succeed. Millions die, and their territory becomes uninhabitable. In the worst scenario, the other side retaliates or the affliction spreads and eventually everyone is dead. But people survive on Mars. Which people? They will include members of one group or their opponents, so if the aim really is to wipe out this group it will be directed at the colonists as well. They are hated, and they are capable of retaliation. Bomb-bearing rockets are much simpler to make than people-bearing rockets. And someone crazy enough to push the button would be crazy enough to direct them at the hated enemy wherever they are found. So, the colony would not be safe. At any rate, it will not be not safe enough that founding it is a better bet than making war less likely on Earth. Worse, **any nation party to founding a colony will arouse suspicion in its enemies that it is scheming to start and survive a war. And this makes war more rather than less likely**. Another danger is the rise of smart robots. But again, there is no escape in space. Space travel and running a colony use as much computation as they can get. This was true of the moon landings and it is even truer now. Human beings have an essential role in plans and design, but on the trip itself they are mostly just going along for the ride. So, imagine, just for the sake of argument, that hyper-calculating artificial intelligences are in a position to threaten human civilization. The extension of that civilization on another planet relies even more on those very powers, which will have to be networked to earthly computation. If mere humans can hack into machinery in targeted countries to disrupt them, then these super-capable but malevolent AIs will have no problem. Whatever their "motives," these will be the same elsewhere as on earth, and space is less of an obstacle to the flow of (mis)information and commands than to the flow of people and physical objects. No safety there. The third danger is ecological. We are ruining the climate and polluting the oceans. We could develop technology that mitigated or even reversed the dangers. It would be easier than developing technology for surviving on Mars, where we must grow food and create oxygen in a very cold and dark environment without much protection from radiation and a limited supply of water. Moreover, getting enough people to Mars to make a colony that could survive without help from home, self-sufficient technologically and with enough genetic diversity that our already rather uniform species would have a future, would involve a lot of rockets. Musk talks in terms of 10,000 flights, although some plans require more. And this would be just to get things started. We just do not know what the impact on the earth and its atmosphere of the launches and the prior manufacturing would be. It would not be positive, at any rate. And industrial power and scientific brains would be diverted away from the needs of earth to the well-being of the colony. It is not what we need; you would only think that we could afford it if you were blind to how desperate things really are. So again, **the colony solution is likely to make the earthly situation even more dire.**

### Framing

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

#### [1] The connection between pain and pleasure and phenomenal conceptions of intrinsic value and disvalue is irrefutable – everything else regresses – robust neuroscience proves.

Blum et al. 18 Kenneth Blum, 1Department of Psychiatry, Boonshoft School of Medicine, Dayton VA Medical Center, Wright State University, Dayton, OH, USA 2Department of Psychiatry, McKnight Brain Institute, University of Florida College of Medicine, Gainesville, FL, USA 3Department of Psychiatry and Behavioral Sciences, Keck Medicine University of Southern California, Los Angeles, CA, USA 4Division of Applied Clinical Research & Education, Dominion Diagnostics, LLC, North Kingstown, RI, USA 5Department of Precision Medicine, Geneus Health LLC, San Antonio, TX, USA 6Department of Addiction Research & Therapy, Nupathways Inc., Innsbrook, MO, USA 7Department of Clinical Neurology, Path Foundation, New York, NY, USA 8Division of Neuroscience-Based Addiction Therapy, The Shores Treatment & Recovery Center, Port Saint Lucie, FL, USA 9Institute of Psychology, Eötvös Loránd University, Budapest, Hungary 10Division of Addiction Research, Dominion Diagnostics, LLC. North Kingston, RI, USA 11Victory Nutrition International, Lederach, PA., USA 12National Human Genome Center at Howard University, Washington, DC., USA, Marjorie Gondré-Lewis, 12National Human Genome Center at Howard University, Washington, DC., USA 13Departments of Anatomy and Psychiatry, Howard University College of Medicine, Washington, DC US, Bruce Steinberg, 4Division of Applied Clinical Research & Education, Dominion Diagnostics, LLC, North Kingstown, RI, USA, Igor Elman, 15Department Psychiatry, Cooper University School of Medicine, Camden, NJ, USA, David Baron, 3Department of Psychiatry and Behavioral Sciences, Keck Medicine University of Southern California, Los Angeles, CA, USA, Edward J Modestino, 14Department of Psychology, Curry College, Milton, MA, USA, Rajendra D Badgaiyan, 15Department Psychiatry, Cooper University School of Medicine, Camden, NJ, USA, Mark S Gold 16Department of Psychiatry, Washington University, St. Louis, MO, USA, “Our evolved unique pleasure circuit makes humans different from apes: Reconsideration of data derived from animal studies”, U.S. Department of Veterans Affairs, 28 February 2018, accessed: 19 August 2020, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6446569/>, R.S.

**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10]. Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14]. Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals. Evolutionary theories of pleasure: The love connection BO:D Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it. It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring. Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding. There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health. Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage. Finding happiness is different between apes and humans As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure. Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even produce **the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered. Desire and reward centers It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation. In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41]. Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42]. Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans. In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45]. Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations. Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50] In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders. In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS. Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.

#### [2] 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)] <https://www.existential-risk.org/concept.html#:~:text=Existential%20Risk%20Prevention%20as%20Global%20Priority%20ABSTRACT%3A%20Existential,in%20net%20existential%20risk%20have%20enormous%20expected%20value.> 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 now know — 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 indeed profoundly 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.

### Underview

#### [1] 1AR Theory –

#### a) AFF gets it because otherwise the neg can engage in infinite harm, making debate impossible,

#### b) drop the debater – the 1AR is too short for theory and substance so ballot implications are key to check,

#### c) no RVIs – they can stick me with 6min of answers to a short arg and make the 2AR impossible,

#### d) competing interps – 1AR interps aren’t bidirectional and the neg should have to defend their norm since they have more time.

#### e) Aff theory comes first - it’s a much larger strategic loss because 1min is ¼ of the 1AR vs 1/7 of the 1NC which means there’s more harm if I’m devoting a larger fraction of time.

#### [2] Aff RVIs –

#### a) Skew – no 2AC for carded offense which means that they invest more time into substance and theory. The crowded 1AR can’t cover both sufficiently making rounds structurally neg skewed. Give aff RVI to make up for time with ballot access