# TOC R4 vs. Stockdale PR

## 1AC

### Advantage

#### The advantage is planetoid bombs -

#### Asteroid mining is coming now, but still needs better tech – Gilbert 21:

Gilbert 21 Alex Gilbert, 4-26-2021, "Mining in Space Is Coming," Milken Institute Review, <https://www.milkenreview.org/articles/mining-in-space-is-coming//SJJK>

Space exploration is back. after decades of disappointment, a combination of better technology, falling costs and a rush of competitive energy from the private sector has put space travel front and center. indeed, many analysts (even some with their feet on the ground) believe that commercial developments in the space industry may be on the cusp of starting the largest resource rush in history: mining on the Moon, Mars and asteroids. While this may sound fantastical, some baby steps toward the goal have already been taken. Last year, NASA awarded contracts to four companies to extract small amounts of lunar regolith by 2024, effectively beginning the [era of commercial space mining](https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/09/Payne-Institute-Commentary-The-Era-of-Commercial-Space-Mining-Begins.pdf). Whether this proves to be the dawn of a gigantic adjunct to mining on earth — and more immediately, a key to unlocking cost-effective space travel — will turn on the answers to a host of questions ranging from what resources can be efficiently. As every fan of science fiction knows, the resources of the solar system appear virtually unlimited compared to those on Earth. There are whole other planets, dozens of moons, thousands of massive asteroids and millions of small ones that doubtless contain humungous quantities of materials that are scarce and very valuable (back on Earth). Visionaries including Jeff Bezos [imagine heavy industry moving to space](https://www.fastcompany.com/90347364/jeff-bezos-wants-to-save-earth-by-moving-industry-to-space) and Earth becoming a residential area. However, as entrepreneurs look to harness the riches beyond the atmosphere, access to space resources remains tangled in the realities of economics and governance. Start with the fact that space belongs to no country, complicating traditional methods of resource allocation, property rights and trade. With limited demand for materials in space itself and the need for huge amounts of energy to return materials to Earth, creating a viable industry will turn on major advances in technology, finance and business models. That said, there’s no grass growing under potential pioneers’ feet. Potential economic, scientific and even security benefits underlie an emerging [geopolitical competition](https://nationalinterest.org/feature/geostrategic-importance-outer-space-resources-154746) to pursue space mining. The United States is rapidly emerging as a front-runner, in part due to its ambitious Artemis Program to lead a multinational consortium back to the Moon. But it is also a leader in creating a legal infrastructure for mineral exploitation. The United States has adopted the world’s first spaceresources law, recognizing the property rights of private companies and individuals to materials gathered in space. However, the United States is hardly alone. Luxembourg and the United Arab Emirates (you read those right) are racing to codify space-resources laws of their own, hoping to attract investment to their entrepot nations with business-friendly legal frameworks. China reportedly views space-resource development as a national priority, part of a strategy to challenge U.S. economic and security primacy in space. Meanwhile, Russia, Japan, India and the European Space Agency all harbor space-mining ambitions of their own. Governing these emerging interests is an outdated treaty framework from the Cold War. Sooner rather than later, we’ll need [new agreements](https://issues.org/new-policies-needed-to-advance-space-mining/) to facilitate private investment and ensure international cooperation.

#### However, mining efforts and development also require the development of technology to control asteroids orbital paths. This brings us into the new age of militarism against ourselves – planetoid bombs allowing the destruction of our planet and targeted use towards minorities – Deudney 20:

Deudney, Daniel. Dark Skies: Space Expansionism, Planetary Geopolitics, and the ends of humanity. Oxford University Press. (2020). pg 250-253 // LHP BT + LHP PS

While asteroids loom large in the horizons of habitat and some military expansionists, they receive little attention from arms controllers and most global security thinkers. As a planetary defense project, diverting asteroids seems a logical part of a Whole Earth Security program and international space infrastructure security cooperation, but opponents of military space expansion are sharply divided about asteroidal diversion. In part these disputes carry over from Cold War nuclear debates, with Edward Teller, Darth Vader for arms controllers, pushing nuclear solutions to the asteroid threat, and arms controllers raising alarms. An important analysis of the dangers inherent in the deflection of asteroidal bodies is provided by Carl Sagan and Stephen Ostro.67 Few figures of the Space Age have been as productive and prominent as Sagan, a planetary astronomer, science educator, and SF author.68 Over the later decades of the twentieth cen- tury Sagan’s work on planetary science, particularly Mars, his television series Cosmos, and his science fiction, most notably Contact (coauthored with Ann Druyan), made him an international celebrity and influential voice for science and space exploration. Unlike virtually all other space scientists and engineers of his era, Sagan also was active in advancing nuclear arms control, studying— and publicizing—the “nuclear winter” hypothesis and promoting cooperation in space to improve Soviet-American relations.69 Although a strong supporter of the larger habitat expansionist vision, Sagan insists large-scale space activities should occur only after nuclear disarmament and planetary habitat stability have been achieved because of an ominous asteroid “deflection dilemma.”70 The essence of the deflection dilemma is simple: **species and civilizational survival inevitably will eventually require the development of the ability to deflect asteroids and comets away from Earth, but this technology also inherently creates the possibility that such objects could be directed toward the Earth.** **The existential stakes are clear: “the destructive energy latent in a large near-Earth asteroid dwarfs anything else the human species can get its hands on,” making them potentially “the most powerful weapon of mass destruction ever devised”71** (see Table 7.4.A and B).72 **Once the population of these bodies is fully mapped, and technologies to deflect them are developed, Sagan argues, the prospects for collision increaseover the natural rate due to the possibility of intentional bombardment. Given these possibilities, perhaps the reason the dinosaurs lasted for nearly two hundred million years is because they did *not* have a space program.**  In his major book on the human space future, *Pale Blue Dot*, **Sagan lays out several scenarios for intentional collisions**. His arguments are essentially the arguments of nuclear arms controllers. Madmen exist, and some “achieve the highest levels of political power in modern industrial nations.”73 **Recalling the extreme destruction caused by Hitler and Stalin, Sagan posits the possibility that a “misanthropic psychopath” or a “megalomaniac lusting after ‘greatness’ or glory, a victim of ethnic violence bent on revenge, someone in the grip of severe testosterone poisoning, some religious fanatic hastening the Day of Judgment, or just some technicians incompetent or insufficiently vigilant” will bring about a catastrophic collision.74** Earth-approaching asteroids amount to “30,000 swords of Damocles hanging over our heads,” for which “there is no acceptable national solution.”75 And, like Cole and Salkeld (not mentioned), Sagan points to the possibilities of clandestine use of this technology. Sagan’s solution to the dilemma is to be found in the fact that “the timescales of the two dangers are different.”76 The natural threat is long term, while the human-made threat is potentially short term, and so delay in both mapping and deflection technology is prudent. Delay should occur until “the reliability of world political organizations” and the “confidence they inspire” have made “significant strides,” permitting them to be “trusted to deal with a problem of this seriousness.”77 But because deflection must eventually occur if humanity is to survive, the asteroid threat provides a “potent motivation to create effective transnational institutions and to unify the human species.”78 Sagan’s argument for delay and extreme caution hinges on political claims about the limitations of the international system and of states in restraining the use of violence, and about the potential viability of world institutions. Danger of use arises because rivalrous states are likely to weaponize asteroids, as they have done with so many other militarily significant capabilities, and because hierarchical and secretive states are prone to reckless and aggressive behaviors. Advocates of planetary defense, most notably James Oberg, reply that Sagan’s scenarios are not plausible because altering an orbit to strike a specific target is more difficult than deflection.79 A RAND study of asteroid weaponization concluded that “much cheaper, more responsive weapons of mass destruction are readily available,” making planetoid bombs militarily unattractive.80 And, like the “nuclear winter” blowback from nuclear war, the effects of a large asteroidal bombardment might also afflict the territory of an attacker. **An** alternative **approach to the collision threat, advanced by this author and others, proposes that an international consortium of spacefaring states under- take such efforts. In order to prevent cooperatively developed techniques and infrastructures being redeployed for unilateral ends, the planetary defense con- sortium would need to be combined with a firm agreement that no one state would conduct comparable activities without the participation of the others. This security regime for asteroids would have the added benefit of reinforcing the nonappropriation provisions of the Outer Space Treaty, while also laying the foundations for possibly jointly exploiting asteroidal resources in a manner that did not exclude the less advantaged members of humanity.** A key reason for thinking that **this “do together, never alone” approach is superior** to Sagan’s strategy of delaying until the interstate system has significantly evolved is that a lengthy delay may not be feasible. While collisions with global catastrophic or existential consequences are sufficiently rare to reasonably risk delay, collisions with severe regional effects occur more frequently. The colli- sion of a moderate-size body, particularly with a populated area, or even the mapping of an eventual collision, is reasonably likely—and is likely to trigger a technology-development response. Furthermore, **nascent efforts to exploit asteroidal resources also entail the development of orbital alteration techniques, thus starting humanity, or at least some tiny fraction of it, on the path to access the immense energies contained in sky rocks**. Furthermore, an international plane- tary defense consortium might help catalyze the international political transfor- mation seen by Sagan as a prudent prerequisite for starting on this fateful path. Sagan’s strong argument for delay sits awkwardly alongside his strong advo- cacy of space colonization as necessary for ensuring the survival of humanity from various possible calamities. His bombardment scenarios are probably misplaced—more plausible after successful colonization than among Earth- bound states. The picture he paints of a solar diaspora is surprisingly omi- nous. Human inhabitants of other worlds will develop a “very different set of perceptions, interests, prejudices, and predispositions” from those living on Earth. And humans living on other worlds will become different due to mechan- ical and genetic alterations.81 He also off-handedly observes that “humans in space will hold the upper hand in any serious dispute with those on Earth.”82 But he does not consider the possible intentions that inhabitants of diverse other worlds might have toward terrestrial humanity, or how his earthly “madman scenarios” might be avoided in the vast reaches of the human space diaspora that he embraces so enthusiastically.

#### Thus, the plan: I affirm: The appropriation of outer space for weapons by private entities is unjust via asteroidal weaponization. To clarify, the aff allows for asteroid mining, but says weaponizing asteroids is an unjust form of appropriation. I don’t defend implementation but if you want to me I can, and ill clarify all questions about the violations for your shells. Planetoid bombs are the worst WMD and allow for the destruction of the planet – Deudney 2:

Deudney, Daniel. Dark Skies: Space Expansionism, Planetary Geopolitics, and the ends of humanity. Oxford University Press. (2020). pg 176- // LHP BT + LHP PS

**An even more audacious scheme for maintaining an ultimate deterrent is Cole and Cox’s proposed “planetoid bomb**.” **Their book**, *Islands in Space: The Challenge of the Planetoids*, **advocates altering the orbits of asteroids for military and other purposes. They claim that a “captured planetoid” of between one and five miles in diameter would have the “impact energy equivalent to several mil- lion megatons,” would create a crater twenty to fifty miles in diameter, and “would destroy whole countries through Earth shock effects.”**78 But they hasten to add that such devastation would “not be anything near as bad” as a general nuclear war because there would be “no nuclear fallout carried by the winds to all parts of the Earth.”79 **They also assert that such a system could be acquired at a cost comparable to existing strategic weapons systems and “could be a by-product of a vigorous manned interplanetary program**.”80 **A captured planetoid would be “the ideal deterrent system” because it could not be de-orbited in less than several hours and thus “would not be feared by a potential enemy as a surprise at- tack weapon.**”**81 Furthermore “an onrushing planetoid” could not be intercepted or deflected “even if detected several days before impact,” and such an attack might be carried out “without much danger of retaliation” because it would be difficult to distinguish from a “natural catastrophe.”**82 However, both high-orbit basing and use of planetoid bombs could be surprise attack weapons if only one side had them or their existence had been kept completely secret. **Terrestrial states would be compelled to maintain extreme vigilance of their neighbor’s space activities and remain perpetually prepared to embark on programs of their own. Curiously neither Salkeld nor Cole and Cox took the next obvious log- ical step to consider what such weapons might mean in the context of lunar or solar space colonization.** Although this scheme suggests criminal insanity, it fits comfortably alongside other—fortunately abortive and outlawed—Cold War investigations of geophysical weaponization, of harnessing hurricanes, tornados, earthquakes, volcanoes, and tsunamis for military purposes.83

#### Asteroid mining can happen without capture

Mares 15 [Miroslav Mares, Professor, at the Division of Security and Strategic Studies, Masaryk University, Czech Republic. Jakub Drmola PhD student, at the Divison of Security and Strategic Studies, Masaryk University, Czech Republic. Revisiting the deflection dilemma. October 1, 2015. https://academic.oup.com/astrogeo/article/56/5/5.15/235650]

There are two basic ways to go about moving the resources contained within a given asteroid to the Earth. They can be extracted from the asteroid during its natural orbit and then transported to the Earth, or the entire asteroid might be moved closer to a more convenient location before starting mining. Thus repositioned, it might even be used as a shielded habitat, once hollowed out (Ostro 1999). There are different speculative costs and benefits associated with either option, which would vary with the size, orbit and composition of the asteroid. But, crucially, the second option would entail putting asteroids into orbit around the Earth, the Moon or possibly at one of the Earth’s Lagrangian points. Indeed, NASA has already planned a mission to capture a small asteroid and place it in a high cislunar orbit, where it would serve as a destination for future manned missions and experiments. This “Asteroid Redirect Mission” is to take place in the next decade and is being pitched mainly as a stepping stone towards a future mission to Mars (see box “NASA’s

Asteroid Redirect Mission”; Brophy et al. 2012, Burchell 2014, Gates et al. 2015).

#### Merriam-Webster defines Outer Space as:

https://www.merriam-webster.com/dictionary/outer%20space // LHP PS

**space immediately outside the earth's atmosphere**

#### It’s actively confusing and bad for international law to conflate outer space and celestial bodies – our interpretation is the only topical one– Cheng 2k:

Cheng, Bin. "Properly speaking, only celestial bodies have been reserved for use exclusively for peaceful (non-military) purposes, but not outer void space." International Law Studies 75.1 (2000): 21.// LHP BT + LHP PS

First of all, it may be necessary to clarify the meaning of the term "outer space" and to introduce the term "outer void space." **Up to and including the Declaration of Legal Principles Governing the Activities of States in the Explo~ ration and Use of Outer Space in General Assembly Resolution 1962, adopted on December 13, 1963,7 the United Nations, including its Committee on the Peaceful Uses of Outer Space (COPUOS), where international space law was constantly being discussed with a view to its progressive development, always referred to outer space separately from celestial bodies**. For instance, Article 3 of the Declaration provides: "Outer space and celestial bodies are not subject to national appropriation .... " (emphasis added). According to this terminology, extraterrestrial space consists, therefore, of "outer space" and "celestial bodies." Celestial bodies are thus treated as a cate~ gory apart from outer space as such, as illustrated in figure 1. However, since the 1967 Space Treaty, which in other respects follows the 1963 Declaration closely in form and in substance, the United Nations always speaks of "outer space, including the moon and other celestial bodies" in treaties and other in, struments relating to outer space which it has sponsored. Thus, the 1967 Space Treaty, in its Article II, which is equivalent to the above,quoted Article 3 of the 1963 Declaration, provides: "Outer space, including the moon and other celestial bodies, is not subject to national appropriation .... " (emphasis added). In other words, henceforth the moon and other celestial bodies were no longer treated as being separate from outer space as such, but rather as forming part of it, as shown in figure 2. It follows that **whenever reference is made to "outer space," the moon and all the other celestial bodies are automatically included. One of the consequences of this change in the use of the term outer space is that the vast space in between all the celestial bodies has lost any specific desig, nation. It has become nameless, causing a great deal of confusion and misunderstanding.**

#### Space terrorism is a legitimate threat with extensive historical precedent

Miller 19 [(Gregory, PhD, The Ohio State University, is an associate professor of Leadership Studies at the Air Command and Staff College at Maxwell AFB, Alabama.) “Space Pirates, Geosynchronous Guerrillas, and Nonterrestrial Terrorists” AIR & SPACE POWER JOURNAL, Fall 2019. https://www.airuniversity.af.edu/Portals/10/ASPJ/journals/Volume-33\_Issue-3/F-Miller.pdf] BC

There are several other ways groups could target a state’s space assets. Once a group has the ability to put something in orbit, it could self-detonate and the debris field itself would threaten any assets in that orbit. Authorities are particularly concerned about nonstate actors being able to use our own technology against us. One fear is of satellite systems being used for microwave-like attacks. Another is the targeting of the atomic clocks on GPS satellites, which could effectively “warp time.”26 Given there are already private companies capable of launching objects into orbit, we should not assume these are simply theoretical scenarios.Although it may seem unlikely terrorist groups would target space capabilities, it is not without historical precedent. As far back as 1972, groups were thinking about using attacks against space assets to enhance their cause or gain more publicity. The Black September Palestinian group threatened an attack against the Apollo 17 mission, specifically to murder or kidnap the crew or their families. That same group killed Israeli athletes at the Munich Olympic Games earlier that year, so NASA took the threats seriously.27 Joshua Gelernter claims the attacks were thwarted, while Eugene Cernan’s autobiography suggests security patrols were added to the families’ homes and schools, but no attack took place.28 More recently, in 2003, NASA increased security for the Columbia shuttle launch, out of concern that al-Qaeda would attack the launch pad because of the Israeli astronaut on the flight.29 In 2013, a letter threatening terror attacks was found at an Indian Space Research Organization (ISRO) facility in Bangalore, India.30It is one thing to threaten an attack, or for an agency to be concerned about attacks, but there have been real attacks against ground installations and satellites. On 3 August 1984, just two days before the launch of an Ariane satellite, the French left-wing group Action Directe bombed the European Space Agency’s (ESA) Paris headquarters, injuring six people.31 The ESA was also hacked in 2015 by the group Anonymous, resulting in the leak of thousands of credentials.32 Also, an ISRO computer was infected with malware, which could have given hackers control of rocket launches and satellite separation.33 While violent extremist organizations are not responsible for these last two attacks against ESA and ISRO, the incidents illustrate the existing capabilities of nonstate actors.Also, if states continue to use their space capabilities to target nonstate actors, then we should expect space assets to become a bigger target for these groups. As an example, the Indian government used its satellites to help strike terrorist camps in Kashmir.34 Such uses of technology are valuable but also invite retaliation against the technology itself, or its operators.

#### Outer space is terrorists’ most likely target – symbolism, investment, and media coverage

Mehmood and Ahmed 21 [(Ashna Mehmood is a student of International Relations at National Defence University, Islamabad) (Shiza Ahmed is a student of International Relations at National Defence University, Islamabad.) “Terrorism in Space: A Possibility” A Journal of Strategic Studies, Summer 2021. http://journal.ciss.org.pk/index.php/ciss-insight/article/view/204] BC

To understand why terrorists may engage in terrorist activities we also need to understand the unique and special character of space such as its symbolic importance, money invested, and the worldwide media coverage associated with it. Thus, the act of space terrorism is more suited to achieving the aims of the terrorist groups. These groups might target advanced states such as the USA, Russia, or China with devastating effect. The reason being that these states are becoming more dependent on space technology with each passing day and a successful attack will result in large scale destruction to the infrastructure and human lives. Counter-terrorism experts argue that even though suicide is often considered the primary weapon of the terrorists, it is never their first choice but used when other options have failed. This option is a means of achieving the desired result and is not a requirement of the catastrophic act. Therefore, the terrorists will opt for any method as long as it is available and help achieve mass casualties or a long-lasting psychological effect.Terrorist groups select a target, which usually has a symbolic meaning or purpose. That means that there is an unlimited category of targets available to them to choose from. Even though counter-terrorism experts claim that terrorist operations rarely show innovation in their tactical operations. The world is rapidly progressing and the availability of new materials and learning of new skills is becoming easier. Terrorists are therefore more likely to expand choice of their targets.Hence the policymakers need to foresee new possible threats that might emerge with the change in time and put themselves in the shoes of the terrorist to predict new methods they may use in future. As the world is advancing with its defense plans, the terrorists will most likely search for new ways to inflict damage. A terrorist-launched cruise missile attack would be an attractive option for terrorists against the US, as it has significant dependency on satellites and space based assets.

#### Motive exists

Miller 2— (Gregory D. Miller, Gregory Miller is Chair of the Department of Spacepower and Director of the Schriever Scholars program at the Air Command and Staff College, Maxwell AFB, AL. His research interests include International Relations (especially alliances, reputation, and deterrence); terrorism; strategy; and space., Space Pirates, Geosynchronous Guerrillas, and Nonterrestrial Terrorists: Nonstate Threats in Space, 8-27-19, Available Online at https://www.airuniversity.af.edu/Portals/10/ASPJ/journals/Volume-33\_Issue-3/F-Miller.pdf, accessed 3-25-2022, HKR-AR)

Guerrillas are often domestic groups targeting their own government with the goal of establishing an independent state, or they are engaged in a struggle against a foreign power that they view as an occupying force.17 Historically, many of these types of groups were motivated by a revolutionary cause (the Marxist-Leninist ideology of the Revolutionary Armed Forces of Colombia, as an example, or the Maoist ideology of Peru’s Shining Path), where they sought a dramatic change in society and the government. Others are motivated by a desire for independence (like the Liberation Tigers of Tamil Eelam (LTTE) in Sri Lanka).18 They may receive aid or support from outside parties, which can include financial, ideological, and military support and even personnel, but they typically have local rather than global goals. As a result, attacks in space by guerrillas would likely target their own government’s capabilities or states that appear to be meddling in their national affairs. One example was the insurgency’s use of jamming during Operation Iraqi Freedom. According to the “Space Threat Assessment 2018,” insurgents deliberately jammed commercial satellite communications links used by the US military.19 As long as those actors stuck to purely military targets, they would remain—at least in an academic sense—guerrillas.

Because most guerrillas would like the international community to view them as having legitimacy, and they would like to govern themselves at some point, either as a separate state or in a newly reconstituted state, they often refrain from attacks that are potentially costly to the civilian population, though there are exceptions where guerrilla groups engaged in terrorist activities. Also, guerrillas often value the sympathy or support of other states and of the international community. As a result, it is unlikely that groups that fall closer to the guerrilla side of the spectrum will engage in attacks against space interests that have long-term and broader consequences. For instance, these groups are unlikely to use kinetic weapons to attack space assets. Such attacks would create a debris field that could subsequently damage other states’ assets and potentially hurt or inconvenience civilian populations. Such consequences would weaken international support and so guerrilla groups will likely refrain from such activities. That does not mean kinetic attacks will not happen, just that they are more likely to be the work of terrorists who are less concerned with international perceptions. Instead, attacks by guerrillas are more likely to focus on effects like degrading an orbit, disabling a capability (like a state’s communications satellites), or blinding a surveillance satellite to reduce a state’s military advantage when engaging with the guerrilla forces.

Because of the similarities between space and cyberspace, we should also expect groups to engage in multidomain attacks using any available new technologies. As early as 1999, hackers seized control of a British military communications satellite with a home computer.20 Guerrilla groups historically engage in a variety of cyber attacks, mostly to harass governments or to deny service to government agencies. For example, the LTTE, the now-inactive Tamil insurgent group in Sri Lanka referenced earlier, often engaged the Sri Lankan military in guerrilla warfare but also carried out terrorist attacks. It had a cyber unit as early as 1997 that frequently targeted the government. Beyond using its own website for propaganda and financing, the LTTE hacked government networks, engaged in denial of service attacks, and engaged in propaganda and counterpropaganda by hacking websites. In 2007, they even pirated a US satellite to send broadcasts to other countries.21 Similar types of attacks are likely to occur against space assets as more groups gain the capability to do so.

Terrorist attacks against space capabilities could come in a variety of forms based on numerous motivations. Terrorist motivations could be driven by nationalism or a revolutionary ideology, similar to what motivates guerrillas but targeting civilians to achieve the group’s goals. Groups also use terrorism for a variety of other reasons that may be local, regional, or global. Examples include religious differences, for **antitechnological purposes**, or simply as part of a neoanarchist movement hoping to prevent governments from becoming even more powerful through the exploitation of space.

Terrorists engage in several different types of tactics, against a variety of targets, though the target is often linked to the broader goals of the group. For instance, Marxist groups are more likely than others to target private businesses, religious groups are more likely than other types of groups to target other religions, and white supremacist groups often attack minorities or minority businesses. Given that terrorists—and guerrillas, for that matter—generally attack targets that are consistent with their strategic goals, what would motivate groups to target a country’s space assets? It could simply be a group that wants to reduce the power of the state or a group that opposes the state’s ideology. Also possible are attacks by groups that oppose the weaponization of space or that oppose technology more broadly, focusing on a state’s policies in space rather than the nature of the state itself, much as single-issue terrorists focus on a state’s treatment of animals or its abortion laws. Many Americans oppose spending money on space when there are economic or social problems at home, so it is not too much of a stretch to expect violence in opposition to using resources on space.22

#### Resources won’t be equitably distributed to solve scarcity, and benefits are impossible to predict.

Matt Davis 09/28/2018 [“Will asteroid mining be an outer-space gold rush?”] [DS] [https://bigthink.com/hard-science/economic-impact-of-asteroid-mining/]

HOW WILL THIS AFFECT EARTH?

As stated earlier, today most of the mineral wealth on Earth comes from a finite supply delivered by comets and meteorites. Part of what makes these minerals valuable is the very fact that they are finite. What’s going to happen when a $10,000 quadrillion asteroid is mined for its resources?

Well, the short answer is we don’t really know. Once this science-fiction story becomes fact, it’s going to fundamentally transform our economies in ways we can’t really predict.

There is some concern that the vast amount of mineral wealth available in space will cause commodity prices to drop precipitously, tanking the economy. This likely won’t be an issue. Only a handful of companies will have a foothold in space, and because of their oligopoly, they won’t flood the market with, say, platinum. That would drive the value of platinum down so low that they couldn’t make any money. As an example of how this will likely play out, we can look at the diamond market. Diamonds are actually quite abundant on Earth, but the De Beers organization has such a monopoly on the market that they only release just enough diamonds to satisfy demand. Since the “supply” was artificially made to always meet demand, De Beers could ensure their continued profits. (Note that the De Beers monopoly has since been broken up).

So, the economy won’t collapse. But this also means that inequality on Earth will become more extreme. Right now, a handful of billionaires are betting on asteroid mining, and, if it pays off, they’re the ones who will reap the benefit. The rags-to-riches conditions of the gold rush aren’t going to be replicated out in space: there will be no Space Dream to match the California Dream.

On the other hand, mining operations will likely take place in space and correspondingly grow and develop in space. As more mineral resources are found in space and less on Earth, mining operations here won’t be as appealing, which is a profoundly good thing. Mining is incredibly damaging to the environment, and in developing countries, mines are often worked by child labor. On a theoretical asteroid mining operation, most of the work would likely be automated, and any pollutants would be shot off into outer space.

The most optimistic perspective on asteroid mining is that it will propel us towards a post-scarcity society, one where the incredible abundance of water and minerals and asteroids will enable virtually limitless development. Gathering water from asteroids, in particular, would represent a tremendous boon. Unfortunately, selling water to thirsty humans isn’t likely what’s going to happen; instead, it’ll be used to make rocket fuel for further asteroid mining ventures.

#### Yes, it’s possible, the tech is on the rise, but not there yet – mining puts over the brink, and much more impactful than nukes, energy released from a small asteroid just entering the atmosphere rivals atomic bombs, but no radioactive fallout so no S.A.D. and higher probability of use. Err aff – physicists and astronomers agree – Santos 21:

Santos, Raquel. “Yep, We Can Weaponize an Asteroid.” The Debrief, 30 Nov. 2021, https://thedebrief.org/asteroid-weapon/. // LHP PS

To understand how an asteroid could be weaponized, we need to know exactly what they are and how they work. When our solar system was forming, a giant cloud of gas and dust collapsed. The material in the center of the cloud formed the Sun, some of the condensing dust became planets, and some of the leftovers became asteroids. Most of them can be found in the main asteroid belt (between Mars and Jupiter), but others are located in the orbital path of planets. No two asteroids are alike. They were all formed at different distances from the Sun and at various locations, and they also vary in shape, size, and composition. Sometimes we hear or read on the news that [an asteroid is coming towards Earth](https://thedebrief.org/this-asteroid-no-one-saw-coming-almost-hit-earth/), but there’s usually never a reason to panic because they either burn up in the atmosphere or are simply too far away to collide with our planet. How exactly could an asteroid be transformed into a weapon? Is it even possible? Humanity has acquired extreme amounts of technical skill over the years, and our knowledge is ever-evolving, so perhaps the idea of having the ability to move asteroids around and making them rain on a planet is not that far-fetched. Thomas Bania, a professor of Astronomy at Boston University, believes that it is possible to weaponize an asteroid, at least in principle. To get there, we would need a way to land on the asteroid, install some sort of propulsion system, and then redirect the asteroid’s orbit so that it hits the intended target on Earth. A potentially feasible way to achieve this would be to use the technology behind the “[mass driver](https://www.wise-geek.com/what-is-a-mass-driver.htm)” invented by Princeton physicist Gerard O’Neill. A mass driver is an electromagnetic accelerator that uses linear motors to accelerate and catapult objects in space without using a rocket. In 1976, O’Neill designed the [Mass Driver 1](https://en.wikipedia.org/wiki/Mass_Driver_1) to demonstrate the concept of the mass driver, which could also be configured as a rocket motor, using space materials for reaction mass and solar power for energy. Since then, a few other prototype mass drivers have been built, but we’re not yet able to make a mass driver on the scale needed to weaponize an asteroid. “This is a slow-speed weapon. It would take many months to change the asteroid’s orbit, and the journey to Earth would also take months. The defenders would have ample warning to mount a counterstrike to take out the asteroid,” Bania told The Debrief. Martin Connors, a planetary astrophysicist at Canada’s Athabasca University, also thinks that “weaponizing an asteroid, or for that matter, an object in orbit around Earth, is in principle. possible.” The devastating effects of asteroid (and asteroid-like) bodies entering the atmosphere have already been demonstrated. “Two impacts over Siberia, one the [Tunguska event of 1908](https://thedebrief.org/remembering-tunguska-a-mystery-explosion-that-baffles-the-cia-over-a-century-later/), and the [Chelyabinsk meteor of 2013](https://www.space.com/33623-chelyabinsk-meteor-wake-up-call-for-earth.html) illustrate this. The first released about 10 Megaton energy equivalent, like a hydrogen bomb, and blew down a huge, virtually uninhabited forest area in Siberia. The second was a much smaller event but passed over a city doing extensive but nonfatal damage,” Connors told The Debrief. The high speed of these objects results in high levels of energy that can be delivered to a target to destroy it without using explosives. We’d still get an energy release comparable to an atomic weapon but without radioactive fallout.  “In the ‘Star Wars’ development era of US defense/offense, aspects of the use of orbiting energy were considered in ‘kinetic kill.’ All this means is that if you impact something at very high speed, you don’t need any explosive to blow things up,” Connors said. “There was an attack strategy for ground targets called ‘[Rods from God](https://www.businessinsider.com/air-force-rods-from-god-kinetic-weapon-hit-with-nuclear-weapon-force-2017-9).’ In this, heavy, heat-resistant metal rods would have been caused to come down on ground targets. However, it is hard to get them through the atmosphere intact and accurately hit a target.”

#### Cascades and extinction – Deudney 3:

Deudney, Daniel. Dark Skies: Space Expansionism, Planetary Geopolitics, and the ends of humanity. Oxford University Press. (2020). // LHP PS

A second way in which colonizing solar space poses **catastrophic and existen- tial threats is through natural threat amplification**. Because **asteroids and comets collide with the Earth, and the total energy contained within the population of near-Earth objects vastly exceeds that contained in all nuclear arsenals, they pose the inevitable prospect of terrestrial calamities**. **The rate at which these objects strike the Earth is now solely a function of natural forces**. Space expansionists advance human movement into space to avert this threat and promote their solution to this problem as a principal space contribution to reducing cata- strophic and existential threats. **But because the technologies to divert away from the Earth are essentially identical to those needed to direct objects toward the Earth, the rate at which these objects strike the Earth could increase if they become instruments of interstate rivalry and become weaponized as planetoid bombs**. This prospect leads Sagan to recommend **delaying the full mapping of asteroid orbits and development of diversion techniques until after some form of effective world government has been established on Earth**. But with the spread of colonies across the solar system, the writ of any government on Earth will be severely limited. **The same anarchical political configurations that Sagan views as incompatible with security from intentional asteroid bombardment on Earth will almost certainly be reproduced on a vastly larger, and more severe, scale in the Solar Archipelago**. If**, as seems extremely likely, systemic anarchy returns with the diaspora of humans across the solar system, then militarized rivalries are very likely to ensue, producing asteroidal weaponization**. If this happens, a **natural threat will have been amplified, enlarging the potential for the occur- rence of a catastrophic event.**

#### An asteroid collision would ensure extinction – would fundamentally alter the biosphere, don’t underestimate its risk – Hudson 19:

Wesley Hudson ’19, news reporter for Express, “Asteroid alert: NASA warning as kilometre long space rock set to skim Earth at 25,000mph”, 8/28/19, Express, [https://www.express.co.uk/news/science/1170826/asteroid-news-NASA-latest-space-rock-asteroid-1998-HL1-earth-danger-apocalypse //](https://www.express.co.uk/news/science/1170826/asteroid-news-NASA-latest-space-rock-asteroid-1998-HL1-earth-danger-apocalypse%20//) LHP PS

AN ASTEROID almost a kilometre wide is currently barreling through space at more than 25,000mph and is due to skim the earth towards the end of October. NASA’s Jet Propulsion Laboratory (JPL) claim the space rock will shoot past the earth within a “close” proximity of the planet in the early hours of October 26. The asteroid, dubbed 1998 HL1, is a so-called Near-Earth Object (NEO) flying on a Close Approach Trajectory. NASA expects the 1998 HL1 to come flying by dangerously close around 1.21am BST (17.21pm PDT). The daunting moment will mark anther journey around the sun for the asteroid since it was discovered in 1998. The asteroid will be travelling at a staggering speed of over 25,000mph as it barrels past the Earth. The JPL predict the asteroid could be between 440m and 990m wide. At its largest an asteroid of this size is bigger than the tallest building in the world, the Burj Khalifa in Dubai. Even at it’s smallest, 1998 HL1 is still bigger than The Shard. Since it was discovered, 1998 HL1 has been seen up to 408 times. An NEO is an asteroid or comet which is on an orbital path intersecting that of the Earth's. This asteroid will miss the Earth by almost four million miles. If it were to strike the Earth, an asteroid of this size would cause catastrophic damage. The extinction of the dinosaurs in the Cretaceous-Tertiary event 65million years ago is famously believed to have been caused by a massive asteroid impact. The Chicxulub Crater in Mexico is the most commonly accepted point of impact, with the responsible body thought to be around 10km in diameter. A car-sized asteroid is estimated to hit the Earth roughly once a year. The majority of asteroids on track for the planet are usually burnt up as they enter the Earth's atmosphere. NASA administrator Jim Bridenstine has previously warned a potential asteroid collision is more likely then people realise. He said: "We have to make sure that people understand that this is not about Hollywood, it's not about the movies. "This is about ultimately protecting the only planet we know, right now, to host life - and that is the planet Earth.” NASA is currently in the process of developing the Double Asteroid Redirection Test (DART). DART will test if it is possible to redirect asteroids that are threatening to impact with Earth. SpaceX chief Elon Musk had previously tweeted fears of a deadly collision that Earth was not prepared for. Mr Musk tweeted: “A big rock will hit Earth eventually & we currently have no defence.”

### Framework

#### The meta-ethic is moral naturalism. Non-natural moral facts are epistemically inaccessible

Papineau 7 [David, Academic philosopher. He works as Professor of Philosophy of Science at King's College London, having previously taught for several years at Cambridge University and been a fellow of Robinson College, Cambridge, “Naturalism”. [http://plato.stanford.edu/entries/naturalism/](http://plato.stanford.edu/entries/naturalism/))]

Moore took this argument to show that moral facts comprise a distinct species of non-natural fact. However, any such non-naturalist view of morality faces immediate difficulties, deriving ultimately from the kind of causal closure thesis discussed above. If **all physical effects are due to a limited range of natural causes, and if moral facts lie outside this range, then it follow that moral facts can never make any difference to what happens in the physical world** (Harman, 1986). At first sight **this** may seem tolerable (perhaps moral facts indeed don't have any physical effects). But it **has** **very awkward epistemological consequences.** For beings like us, **knowledge of the spatiotemporal world is mediated by physical processes involving our sense organs and cognitive systems. If moral facts cannot influence the physical world, then [we can’t] it is hard to see how we can have any knowledge of them.**

#### All experience is justified through an end result of increase in pleasure and decrease of pain – anything else regresses and collapses – Nagel 86:

Nagel, Thomas (University Professor of Philosophy and Law Emeritus at New York University). “The View From Nowhere.” 1986.

I shall defend the unsurprising claim that sensory pleasure is good and pain bad, no matter whose they are. The point of the exercise is to see how the pressures of objectification operate in a simple case. Physical pleasure and pain do not usually depend on activities or desires which themselves raise questions of justification and value. They are just sensory experiences in relation to which we are fairly passive, but toward which we feel involuntary desire or aversion. Almost everyone takes the avoidance of his own pain and the promotion of his own pleasure as subjective reasons for action in a fairly simple way; they are not backed up by any further reasons.

#### Thus, the standard is maximizing expected well-being – it’s hedonistic act-util. To clarify, the standard is concerned with preventing death. Prefer:

#### 1] Death is bad and o/w

#### A] It ontologically destroys the subject.

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

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

#### B] You don’t get the choice to determine death for other people.

Paterson 2 – Department of Philosophy, Providence College, Rhode Island. (Craig, “A Life Not Worth Living?”, Studies in Christian Ethics, <http://sce.sagepub.com>)

In determining whether a life is worth living or not, **attention should be focused upon an array of ‘interests’ of the person**, and these, for the competent patient at least, are going to vary considerably, since they will be informed by the patient’s underlying dispositions, and, for the incompetent, by a minimal quality threshold. It follows that for competent patients, a broad-ranging assessment of quality of life concerns is the trump card as to whether or not life continues to be worthwhile. Different patients may well decide differently. That is the prerogative of the patient, for the only unpalatable alternative is to force a patient to stay alive. For Harris, life can be judged valuable or not when the person assessing his or her own life determines it to be so. **If a person values his or her own life, then that life is valuable, precisely to the extent that he or she values it**. Without any real capacity to value, there can be no value. As Harris states, ‘. . . the value of our lives is the value we give to our lives’. It follows that the **primary** **injustice** done to a person is to deprive the person of a life **he or she may think valuable**. Objectivity in the value of human life, for Harris, essentially becomes one of negative classification (ruling certain people out of consideration for value), allied positively to a broad range of ‘critical interests’; interests worthy of pursuing — **friendships, family, life goals, etc**. — which are subjected to de facto **self-assessment** for the further determination of meaningful value. Suicide, assisted suicide, and voluntary euthanasia, can therefore be justified, on the grounds that once the competent nature of the person making the decision has been established, the thoroughgoing commensuration between different values, in the form of interests or preferences, is essentially left up to the individual to determine for himself or herself.

#### 2] Extinction hijacks and side constrains the framework – it o/w and comes first -

A] Uncertainty – Pummer 15:

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

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

#### B] Forecloses future improvement – we can never improve society because our impact is irreversible

#### C] Turns suffering – mass death causes suffering because people can’t get access to resources and basic necessities

#### D] Moral obligation – allowing people to die is unethical and should be prevented because it creates ethics towards other people

#### E] Objectivity – body count is the most objective way to calculate impacts because comparing suffering is unethical

#### F] Lexicality – you need to be alive to act in their ethical theory

#### 3] Theory –

#### A] Ground – Every impact can be linked to util but other ethics exclude most impacts. Ground key to fairness since you need arguments to win.

#### B] Topic Lit – Most articles are written through the lens of util since they’re written for policymakers and the general public to understand who take consequences to be important, not philosophy majors. Key to fairness and education since it’s a lens through which we engage the res.

#### C] Resolvability - Only consequences can explain degrees of wrongness, i.e. why it’s worse to break a promise to a dying friend than to skip meeting someone for lunch – either ethical theories cannot explain comparative badness, or it collapses

#### 4] Use epistemic modesty for evaluating the framework debate – that’s multiplying the probability a framework is true by its relative offense

#### A] Substantively true since high probability of winning your framework increases the odds that your impacts matters, but that probability is still dependent of the impacts. A 51% chance your framework is true still means there is a 49% chance my impacts matter – modesty produces the highest chance of moral actions

#### B] Clash—disincentives debaters from going all in for framework which means we get the ideal balance between topic ed and phil ed

#### 5] No act-omission distinction -

### Method

#### Apocalyptic images challenge dominant power structures to create futures of social justice

Jessica Hurley 17, Assistant Professor in the Humanities at the University of Chicago, “Impossible Futures: Fictions of Risk in the Longue Durée”, Duke University Press, https://read.dukeupress.edu/american-literature/article/89/4/761/132823/Impossible-Futures-Fictions-of-Risk-in-the-Longue

If contemporary ecocriticism has a shared premise about environmental risk it is that genre is the key to both perceiving and, possibly, correcting ecological crisis. Frederick Buell’s 2003 From Apocalypse to Way of Life: Environmental Crisis in the American Century has established one of the most central oppositions of this paradigm. As his title suggests, Buell tells the story of a discourse that began in the apocalyptic mode in the 1960s and 70s, when discussions of “the immanent end of nature” most commonly took the form of “prophecy, revelation, climax, and extermination” before turning away from apocalypse when the prophesied ends failed to arrive (112, 78). Buell offers his suggestion for the appropriate literary mode for life lived within a crisis that is both unceasing and inescapable: new voices, “if wise enough….will abandon apocalypse for a sadder realism that looks closely at social and environmental changes in process and recognizes crisis as a place where people dwell” (202-3). In a world of threat, Buell demands a realism that might help us see risks more clearly and aid our survival.¶ Buell’s argument has become a broadly held view in contemporary risk theory and ecocriticism, overlapping fields in the social sciences and humanities that address the foundational question of second modernity: “how do you live when you are at such risk?” (Woodward 2009, 205).1 Such an assertion, however, assumes both that realism is a neutral descriptive practice and that apocalypse is not something that is happening now in places that we might not see, or cannot hear. This essay argues for the continuing importance of apocalyptic narrative forms in representations of environmental risk to disrupt conservative realisms that maintain the status quo. Taking the ecological disaster of nuclear waste as my case study, I examine two fictional treatments of nuclear waste dumps that create different temporal structures within which the colonial history of the United States plays out. The first, a set of Department of Energy documents that use statistical modeling and fictional description to predict a set of realistic futures for the site of the Waste Isolation Pilot Plant in New Mexico (1991), creates a present that is fully knowable and a future that is fully predictable. Such an approach, I suggest, perpetuates the state logics of implausibility that have long undergirded settler colonialism in the United States. In contrast, Leslie Marmon Silko’s contemporaneous novel Almanac of the Dead (1991) uses its apocalyptic form to deconstruct the claims to verisimilitude that undergird state realism, transforming nuclear waste into a prophecy of the end of the United States rather than a means for imagining its continuation. In Almanac of the Dead, the presence of nuclear waste introjects a deep-time perspective into contemporary America, transforming the present into a speculative space where environmental catastrophe produces not only unevenly distributed damage but also revolutionary forms of social justice that insist on a truth that probability modeling cannot contain: that the future will be unimaginably different from the present, while the present, too, might yet be utterly different from the real that we think we know.¶ Nuclear waste is rarely treated in ecocriticism or risk theory, for several reasons: it is too manmade to be ecological; its catastrophes are ongoing, intentionally produced situations rather than sudden disasters; and it does not support the narrative that subtends ecocritical accounts of risk perception in which the nuclear threat gives rise to an awareness of other kinds of threat before reaching the end of its relevance at the end of the Cold War.2 In what follows, I argue that the failure of nuclear waste to fit into the critical frames created by ecocriticism and risk theory to date offers an opportunity to expand those frames and overcome some of their limitations, especially the impulse towards a paranoid, totalizing realism that Peter van Wyck (2005) has described as central to ecocriticism in the risk society. Nuclear waste has durational forms that dwarf the human. It therefore dwells less in the economy of risk as it is currently conceptualized and more in the blown-out realm of deep time. Inhabiting the temporal scale that has recently been christened the Anthropocene, the geological era defined by the impact of human activities on the world’s geology and climate, nuclear waste unsettles any attempt at realist description, unveiling the limits of human imagination at every turn.3 By analyzing risk society through a heuristic of nuclear waste, this essay offers a critique of nuclear colonialism and environmental racism. At the same time, it shows how the apocalyptic mode in deep time allows narratives of environmental harm and danger to move beyond the paranoid logic of risk. In the world of deep time, all that might come to pass will come to pass, sooner or later. The endless maybes of risk become certainties. The impossibilities of our own deaths and the deaths of everything else will come. But so too will other impossibilities: talking macaws and alien visitors; the end of the colonial occupation of North America, perhaps, or a sudden human determination to let the world live. The end of capitalism may yet become more thinkable than the end of the world. Just wait long enough. Stranger things will happen.¶

#### Youth participatory action research enables transformative resistance and is crucial to make activism work

Cammarota and Fine 08

(Julio, Education@Arizona, Michelle, UrbanEducation@TheGraduateCenterNYU, *Youth Participatory Action Research*

In the Matrix, Morpheus, played by Laurence Fishburne, places Keanu Reeves’ character Neo in a chair to tell him face to face about the real truth of his experience. Morpheus shows Neo a red pill in one hand and a blue one in the other, describing that the red pill will lead him “down the rabbit hole” to the truth while the blue pill will make him forget about their conversation and return everything back to “normal.” Neo looks confused and worried, hesitates for a moment, and then reaches to grab and then swallow the red pill. " e “blue and red pill” scene in ! e Matrix serves as an excellent metaphor for the relationships some educators/activists have with their students, and the kinds of choices we ask them to make. The critical educational experience offered might lead the student “down the rabbit hole” past the layers of lies to the truths of systematic exploitation and oppression as well as possibilities for resistance. A$ er he ingests the red pill, Neo ends up in the place of truth, awakening to the reality that his entire world is a lie constructed to make him believe that he lives a “normal” life, when in reality he is fully exploited day in and day out. What is “normal” is really a mirage, and what is true is the complete structural domination of people, all people. " is book, Revolutionizing Education, literally connects to the metaphorical play on chimera and veracity forwarded by the narrative in ! e Matrix. Examples are presented throughout in which young people resist the 1 normalization of systematic oppression by undertaking their own engaged praxis—critical and collective inquiry, re% ection and action focused on “reading” and speaking back to the reality of the world, their world (Freire, 1993). The praxis highlighted in the book—youth participatory action research (YPAR)—provides young people with opportunities to study social problems affecting their lives and then determine actions to rectify these problems. YPAR, and thus Revolutionizing Education, may extend the kinds of questions posed by critical youth studies (Bourgois, 1995; Fine and Weis, 1998; Giroux, 1983; Kelley, 1994; Macleod, 1987; McRobbie, 1991; Oakes et al., 2006; Rasmussen et al., 2004; Sullivan, 1989; Willis, 1977). How do youth learn the skills of critical inquiry and resistances within formal youth development, research collectives, and/or educational settings? How is it possible for their critical inquiries to evolve into formalized challenges to the “normal” practices of systematic oppression? Under what conditions can critical research be a tool of youth development and social justice work? The Matrix infers revolution by showing how Neo learns to see the reality of his experiences while understanding his capabilities for resistance. " e YPAR cases presented in this book also follow a similar pattern: young people learn through research about complex power relations,histories of struggle, and the consequences of oppression. They begin to re- vision and denaturalize the realities of their social worlds and then undertake forms of collective challenge based on the knowledge garnered through their critical inquiries. As you will read in this volume, the youth, with adult allies, have written policy briefs, engaged sticker campaigns, performed critical productions, coordinated public testimonials—all dedicated to speaking back and challenging conditions of injustice. What perhaps distinguishes young people engaged in YPAR from the standard representations in critical youth studies is that their research is designed to contest and transform systems and institutions to produce greater justice—distributive justice, procedural justice, and what Iris Marion Young calls a justice of recognition, or respect. In short, YPAR is a formal resistance that leads to transformation—systematic and institutional change to promote social justice. YPAR teaches young people that conditions of injustice are produced, not natural; are designed to privilege and oppress; but are ultimately challengeable and thus changeable. In each of these projects, young people and adult allies experience the vitality of a multi- generational collective analysis of power; we learn that sites of critical inquiry and resistance can be fortifying and nourishing to the soul, and at the same time that these projects provoke ripples of social change. YPAR shows young people how they are consistently subject to the impositions and manipulations of domi-nant exigencies. These controlling interests may take on the form of white supremacy, capitalism, sexism, homophobia, or xenophobia—all of which is meant to provide certain people with power at the expense of subordinating others, many others. Within this matrix or grid of power, the possibilities of true liberation for young people become limited. Similar to the film the Matrix, the individual, like Neo, may be unaware of the infections of power fostering oppression. The dawning of awareness emerges from a critical study of social institutions and processes in influencing one’s life course, and his/her capacity to see differently, to act anew, to provoke change. Critical youth studies demonstrate that the revolutionary lesson is not always apprehended in schools; sometimes, young people gain critical awareness through their own endogenous cultural practices. Such is the case of Willis’ (1977) Lads in Learning to Labor. Working- class youth attain insights about the reproductive function of schools through their own street cultural sensibilities. However, they use these insights to resist education en masse by forgoing school for jobs in factories. Scholars (Fine, 1991; Solórzano and Delgado- Bernal, 2001) identify this form of resistance as “self- defeating,” because the students’ choice to forgo school for manual labor contributes to reproducing them as working class. Although the Lads resist the school’s purpose of engendering uneven class relations, their resistance contributes to this engendering process by undermining any chance they had for social mobility. Young people also engage in forms of resistance that avoid self- defeating outcomes while striving for social advancement. Scholars (Fordham, 1996) identify this next level of resistance as “conformist”—in the sense that young people embrace the education system with the intention of seeking personal gains, although not necessarily agreeing with all the ideological ! ligree espoused by educational institutions. " ey use schooling for their own purposes: educational achievements that garner individual gains with social implications beyond the classroom, such as economic mobility, gender equality, and racial parity. Solórzano and Delgado- Bernal (2001: 319–20) contend that students may attain another, yet more conscious form of resistance, which they call “transformational resistance.” A transformational approach to resistance moves the student to a “deeper level of understanding and a social justice orientation.” Those engaged in transformational resistance address problems of systematic injustice and seek actions that foster “the greatest possibility for social change” (ibid.). Although Solórzano and Delgado- Bernal (2001) provide a useful typology (self- defeating, conformist, and transformational) that acknowledges the complexities of resistance, the education and development processes leading to resistances are somewhat under- discussed. Apparently, the production of cultural subjectivities (Bourgois, 1995; Levinson et al., 1996; Willis, 1977) is related to resisting ideological oppressions. However, these cultural productions tend to occur in more informal settings (non- institutional, non- organizational) such as peer groups, families, and street corners. The work presented in this volume agitates toward another framework— where youth are engaged in multi- generational collectives for critical inquiry and action, and these collectives are housed in youth development settings, schools, and/or research sites. With this series of cases, we challenge scholars, educators, and activists to consider how to create such settings in which research for resistance can be mobilized toward justice. A key question is whether resistance can develop within formal proces ses (pedagogical structures or youth development practices). If this question is left $ unattended, we risk perceiving youth resistances as “orientations” as opposed to processes. In other words, the kinds of resistances, whether self- defeating, conformist, or transformational, will be identified as emerging from some inherent fixxed, cultural sensibility. This perspective of young people sustains the ridged essentialization trap that has plagued studies of youth for years (Anderson, 1990; Newman, 1999; Ogbu, 1978). The traditional essentialized view maintains that any problem (poverty, educational failure, drug and alcohol abuse, etc.) faced by youth results of their own volition, thereby blaming the victim for the victim’s problems. Critical youth studies goes beyond the traditional pathological or patronizing view by asserting that young people have the capacity and agency to analyze their social context, to engage critical research collectively, and to challenge and resist the forces impeding their possibilities for liberation. However, another step is needed to further distance critical youth studies from essentialized perspectives by acknowledging that resistances can be attained through formal processes in “real” settings, through multi- generational collectives, and sometimes among youth alone. YPAR represents not only a formal pedagogy of resistance but also the means by which young people engage transformational resistance. (1-4)

### Theory

#### 1] 1AR Theory Paradigm – A] Grant me it or else the neg can be infinitely abusive – B] Competing interps because reasonability incentivizes defensive dumps to overwhelm the short 2ar – C] Drop the debater because the 2ar is too short to win theory and substance – D] No RVIs or else 6 minutes in the 2n on theory makes the 2ar impossible

#### And 1AR theory outweighs –

#### A] I can’t win on the neg shell and my shell in the 3-minute 2ar.

#### B] Epistemic indict – if the 1n was abusive I couldn’t respond it, so you can’t evaluate their args.

#### 2] Aff RVIs –

#### A] The 2ar is too short to win theory and substance

#### B] Reciprocity – The neg has access to T and theory, so we need an RVI and theory to compensate for your unique avenue to the ballot

#### 3] Presumption and permissibility affirm because affirming is harder – that’s the only implication

#### A] 4 minute 1ar needs to answer 7 and hedge against 6 minute collapse

#### B] neg is reactionary and thus gets to tailor

#### C] empirics – there’s a rigorous methodology and large sample size – Shah 1-29,

[Sachin Shah “A Statistical Analysis of the Impact of the Transition to Online Tournaments in Lincoln-Douglas Debate by Sachin Shah.” January 29, 2021, http://nsdupdate.com/2021/a-statistical-analysis-of-the-impact-of-the-transition-to-online-tournaments-in-lincoln-douglas-debate-by-sachin-shah/]

It is also interesting to look at the trend **over** multiple topics. Of the **238 bid** distributing **tournaments from** August **2015** to present[7], **the negative won 52.32% of rounds** (p-value < 10^-30, 99% confidence interval [51.84%, 52.81%]). Of elimination rounds, the negative won 55.79% of rounds (p-value < 10^-15, 99% confidence interval [54.08%, 57.50%]). This continues to suggest **the bias might be structural and not topic specific as this analysis now includes 18 topics.**

#### If we are tied on the flow I did the better debating to overcome the skew.