# [JF22] Mining DA

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#### Next off is the mining disad –

#### Commercial asteroid mining is coming now – lower costs and improving tech make it economically viable – and the legal basis is already in place in multiple countries– that helps acquire water for rocket fuel and rare earth metals

Gilbert, a PhD students writes for the Milken Institute Review in 2021

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**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**. 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 unlimite**d 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 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 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 to facilitate private investment and ensure international cooperation.

What’s Out There

Back up for a moment. For the record, space is already being heavily exploited, because space resources include non-material assets such as orbital locations and abundant sunlight that enable satellites to provide services to Earth. Indeed, satellite-based telecommunications and global positioning systems have become indispensable infrastructure underpinning the modern economy. Mining space for materials, of course, is another matter.

In the past several decades, planetary science has confirmed what has long been suspected: celestial bodies are potential sources for dozens of natural materials that, in the right time and place, are **incredibly valuable**. Of these, water may be the most attractive in the near-term, because — with assistance from solar energy or nuclear fission — H2O can be split into hydrogen and oxygen to make **rocket propellant**, facilitating in-space refueling. So-called “**rare earth” metals** are also **potential targets** of asteroid miners intending to service Earth markets. Consisting of 17 elements, including lanthanum, neodymium, and yttrium, these critical materials (most of which are today mined in China at great environmental cost) **are required for electronic**s. **And they loom as bottlenecks in making the transition from fossil fuels to renewables backed up by battery storage.**

#### However, the legal framework that strikes the best balance of providing economic incentives for mining while preventing unbeneficial land claims requires a doctrine of appropriation – the plan prevents that

Meyers, a J.D. Candidate, writes for Oregon Review International 2015

**Meyers 15** Meyers, Ross. J.D. candidate at the University of Oregon Law School. "The doctrine of appropriation and asteroid mining: incentivizing the private exploration and development of outer space." Or. Rev. Int'l L. 17 (2015): 183. Italics in original. [Quality Control]

The **doctrine of appropriation** is a reasonable rule for adjudicating asteroid claims, and it could **easily be modified to apply to asteroid mining**. In the context of water rights, the doctrine of appropriation requires that the claimant be a landowner in order to claim the right to use a water source. It does not make sense, however, for the international community to grant complete ownership over asteroids toa single entity, so the landowner requirement of the rule should be removed. A similar modification would need to be made to the "beneficial use" language of the doctrine.

In the context of water rights, an appropriator obtains rights only to water that he or she can reasonably put to beneficial use. The metals contained in asteroids have a high level of marketability. For that reason, a mining entity could potentially put any amount of obtained metal to beneficial use, in the sense that the resources can be sold. This, however, would defeat the purpose of the rule, which is to limit such unreasonable claims. To ameliorate this problem, the doctrine of appropriation could be modified to define "beneficial use "constructively by providing that beneficial use is assumed for any resources that have been removed from the asteroid that the mining entity can reasonably hope to transport to market in a return journey. With the **astronomical cost** of undertaking a trip to such an asteroid, this modification would limit mining entities to only what they can carry back, thereby leaving the untapped resources available to other entities capable of making the same trip. Considering the size and profitability of metal deposits on asteroids, this modification to the doctrine of appropriation would **not be overly burdensome to corporate interests**. At the same time, it would **satisfy the economic imperative of promoting the rapid development of asteroid resources.**

By changing the landowner requirement, and qualifying the “beneficial use" language, the doctrine of appropriation would be essentially ready for application to asteroid mining claims. The only other changes necessary would be some additional requirements that are common to other space related provisions, like those found in the Outer Space Treaty of 1968. For example, a reporting requirement or clause guaranteeing asylum for other astronauts. A functional rule might read something like this:

*State parties or private entities may, upon actual possession, lay claim to natural resources found on or below the surface of asteroids. Rights to appropriate are given in order of seniority, starting with the first party to land on the surface of the asteroid and establish control over the resources, be it water, methane, metal, or any other beneficial substances. A party will be said to have established control over a resource once he has mined the substance and removed it from the asteroid. A senior appropriator may use as much of the asteroid's resources as he can take from the asteroid and put to beneficial use, and may continue to enlarge his share until another junior appropriator begins to appropriate resources from source for beneficial use. For the purposes of this Agreement, "beneficial use “refers to the amount of resources that an appropriator has removed from the asteroid that the actor may reasonably hope to bring home in a return voyage. Resources in excess of what an appropriator can reasonably hope to transport to market in a single voyage do not qualify as having a beneficial use, and are therefore not yet claimed. This means that the extraction of metal from an asteroid does not serve to provide ownership if the appropriator plans on letting the resources languish until another voyage is undertaken to secure the resources and bring them back to Earth. Junior appropriators receive rights in the source of resources (the asteroid) as they find it, and may prevent the senior appropriator from enlarging his share to the junior appropriator’s detriment under a no-injury rule. No state party will attempt to hinder other parties from landing on or using the asteroid, and parties will assist other entities on an asteroid, should they need emergency assistance. Mining claims on asteroids will be reported to the Secretary-General of the United Nations, and state parties agree to release the location of the asteroid, and any scientific findings to the United Nations, the general public, and the scientific community. In the event that the asteroid is on a collision course with any other celestial body, all state parties agree to follow the course of action suggested by the United Nations. Should the United Nations decide the asteroid must be destroyed, no state party may claim liability for resources contained within the asteroid, but not yet captured. This provision applies only to asteroids as classified by the scientific community, and does not apply to planets, comets, meteorites, or any other celestial body not mentioned.*

There is no doubt that asteroids may be **extremely beneficial to mankind,** both as a **source of resources** and as a jumping-off point to **far off locations in space**. The human-race has progressed scientifically and technologically to the point that space travel is within commercial reach, and the need for new international laws governing the ownership of space has never been more apparent. The Outer Space Treaty of 1968made great strides in developing rational rules for space and many of its provisions should be maintained in their original form. However, by allowing ownership of asteroids under the doctrine of **appropriation**, the international community can **incentivize the exploration and development of space in a way that reflects the needs of society in general**, **without vesting an absolute monopoly in a single entity.** The doctrine of appropriation helped drive American westward expansion, and its application to space mining would help drive the human race in its expansion into the space, the final frontier.

#### Asteroid mining offsets terrestrial growth that ruins the environment and enables solar power satellites – both solve climate change

#### Veteran Journalist Taylor elaborates for Mashable in 2019

**Taylor 19** Chris Taylor is a veteran journalist. Previously senior news writer for Time.com a year later. In 2000, he was named San Francisco bureau chief for Time magazine. He has served as senior editor for Business 2.0, West Coast editor for Fortune Small Business and West Coast web editor for Fast Company. Chris is a graduate of Merton College, Oxford and the Columbia University Graduate School of Journalism. "How asteroid mining will save the Earth — and mint trillionaires." Mashable, 2019, mashable.com/feature/asteroid-mining-space-economy. [Quality Control]

The mission is essential, Joyce declares, to save Earth from its **major problems**. First of all, the fictional billionaire wheels in a fictional Nobel economist to demonstrate the actual truth that the entire global economy is sitting on a **mountain of debt**. It has to keep growing or it will **implode**, so we might as well take the majority of the **industrial growth off-world where it can’t do any more harm to the biosphere.**

Secondly, there’s the **climate change fix**. Suarez sees asteroid mining as the only way we’re going to build **solar power satellites.** Which, as you probably know, is a form of uninterrupted solar power collection that is theoretically more effective, inch for inch, than any solar panels on Earth at high noon, but operating 24/7. (In space, basically, **it’s always double high noon).**

The power collected is beamed back to large receptors on Earth with large, low-power microwaves, which researchers think will be harmless enough to let humans and animals pass through the beam. A space solar power array like the one China is said to be working on could reliably supply 2,000 gigawatts — or **over 1,000 times more power than the largest solar farm currently in existence.**

“We're looking at a 20-year window to **completely replace human civilization's power infrastructure,**” Suarez told me, citing the report of the Intergovernmental Panel on Climate Change on the coming catastrophe. Solar satellite technology “has existed since the 1970s. What we were missing is **millions of tons of construction materials** in orbit. **Asteroid mining can place it there.”**

The Earth-centric early 21st century can’t really wrap its brain around this, but the idea is not to bring all that building material and precious metals down into our gravity well. Far better to create a whole new commodities exchange in space. You mine the useful stuff of asteroids both near to Earth and far, thousands of them taking less energy to reach than the moon. That’s something else we’re still grasping, how relatively easy it is to ship stuff in zero-G environments.

2100, the U.N. estimates. So if optimism is always a matter of perspective, the possibility of four degrees shapes mine.

### NR – Turns Capitalism

#### Asteroid mining causes resource abundance that solves the transition to a post-scarcity economy – and makes currency worthless

Williams 20 Matthew S Williams is an author, a writer for Universe Today, and the curator of their Guide to Space section. His works include sci-fi/mystery The Cronian Incident and his articles have been featured in Phys.org, HeroX, Popular Mechanics, Business Insider, Gizmodo, and IO9, ScienceAlert, Knowridge Science Report, and Real Clear Science, with topics ranging from astronomy and Earth sciences to technological innovation and environmental issues. “Asteroid Mining to Shape the Future of Our Wealth” Nov 06, 2020. [Quality Control]

These recommendations address another important issue, which is the impact that the influx of all these resources would have on Earth's economy. By tapping resources that are far more abundant than what exists at home, humanity will be able to transcend its current economic models.

For as long as human beings have conducted trade and businesses, scarcity has been a crucial element. By having abundant sources of necessary resources, humanity could effectively become a post-scarcity species. At the same time, if supply should suddenly exceed demand, then the value of these resources will drop considerably, and all the wealth that is measured using them will also suffer.

As such, it is much more likely that asteroid mining - rather than being a savior to Earth's economy - will be one of the means through which humanity expands into space. Saving planet Earth could very well happen as a result, but only in the long run.

#### Space’s lack of inhabitants and ecological problems solves the vast majority of their criticism – but it segregates the capitalists from ruining Earth and generates enough resources to make the planet’s surface into a Communist utopia

Taylor 19 Chris Taylor is a veteran journalist. Previously senior news writer for Time.com a year later. In 2000, he was named San Francisco bureau chief for Time magazine. He has served as senior editor for Business 2.0, West Coast editor for Fortune Small Business and West Coast web editor for Fast Company. Chris is a graduate of Merton College, Oxford and the Columbia University Graduate School of Journalism. "How asteroid mining will save the Earth — and mint trillionaires." Mashable, 2019, mashable.com/feature/asteroid-mining-space-economy. [Quality Control]

All in all, it’s starting to sound a damn sight more beneficial to the human race than the internet economy is. Not a moment too soon. I’ve written encouragingly about asteroid mining several times before, each time touting the massive potential wealth that seems likely to be made. And each time there’s been a sense of disquiet among my readers, a sense that we’re taking our rapacious capitalist ways and exploiting space.

Whereas the truth is, this is exactly the version of capitalism humanity has needed all along: the kind where there is no ecosystem to destroy, no marginalized group to make miserable. A safe, dead space where capitalism’s most enthusiastic pioneers can go nuts to their hearts’ content, so long as they clean up their space junk.

(Space junk is a real problem in orbital space because it has thousands of vulnerable satellites clustered closely together around our little blue rock. The vast emptiness of cislunar space, not so much.)

And because they’re up there making all the wealth on their commodities market, we down here on Earth can certainly afford to focus less on growing our stock market. Maybe even, whisper it low, we can afford a fully functioning social safety net, plus free healthcare and free education for everyone on the planet.

### FW 1NR

#### Industrial and post-industrial capitalism is literally the best thing that’s ever happened to education

Grostic 16 (Director of Professional Learning, 2013 to Present Pete joined our team in the summer of 2013 after serving Kentwood Public Schools for 7 years as a High School Math teacher. He received his bachelor’s degree from Albion College, his Master’s degree in Educational Leadership and his Specialist in Education degree from Western Michigan University. As a member of our professional learning team, Pete brings a quiet confidence to his work with teachers. Our work in classroom transformation is a long journey with many ups and downs but Pete does a fabulous job of breaking down the most complex problems into their simplest forms in order to assist each teacher.), "enlightenment now: 3 ways education has improved", Curriculum By Design, NCS, 2016, <https://cbdconsulting.com/enlightenmentnow/>

I recently read Steven Pinker’s latest book: Enlightenment Now: The Case for Reason, Science, Humanism, and Progress. Pinker does a phenomenal job of showcasing just how far humanity has come in myriad ways. It’s well worth a read. Here’s the upshot: We live in the safest, wealthiest, and smartest time in the history of our planet. The world is better in almost every way: wealth distribution, health outcomes, social spending, wars, crime, racism, democracy, you name it. (Here’s a nice summary of the book if you’re interested, complete with the data to back up these claims.) What I really want to write about today is how education has improved. But first, a couple of quick examples that show just how far our civilization has come. Life expectancy: In the year 1800, the world’s life expectancy was 29 years (it was only 35 in the US if you’re wondering). By 2015, life expectancy had risen to 70 worldwide. Extreme poverty: Believe it or not, but in 1820, 89% of the world lived in extreme poverty. By 2015, that percentage had dropped to 10% worldwide. Pinker goes on and on with many more examples. Needless to say, we should all feel lucky to be alive here and now. There simply has never been a better time than now, despite what your nostalgia for the ’60s or ’80s might be telling you. The same can be said for education. The common narrative is that our system of education, both here in the US and worldwide, is on the decline. Well, it turns out that’s not what the facts say. Here are 3 ways that education has improved dramatically. Literacy – In the year 1500, rates of literacy were minuscule, roughly 10% of the world. By 1825, that rate had ticked up to… 11%. As of 2016, over 80% of the world is literate. That’s amazing. Basic Education – this is a measure of formal schooling. Believe it or not, only 22% of the world received some kind of formal education in 1870. In the US, that rate was much higher, but still only 80%. By 2010, over 75% of the world was educated formally; it’s nearly 100% in the US. IQ Gains – And we’re getting smarter. The average person in the world would score nearly 30 points higher on an IQ test today than they would in 1909 (that’s incredible!). Despite the narrative about diminishing US standing on test scores compared to the rest of the world, the TIMMS and NAEP assessments show that US students are getting smarter too (insofar as tests like those can actually measure intelligence). Doomsday narratives are arresting and get people’s attention. But when it comes to education, doomsday is quite far from the truth. We’re actually doing amazingly well. That isn’t to say that it’s time to kick our feet up and celebrate. All of those gains listed above came from hard work and ingenuity. There’s work left to do, to be sure. But for just a moment, feel free to zoom out and recognize just how far we’ve come.

#### Prefer it- Grostic is a professor of professional learning whereas Baedan is just a random internet collective, no way to check qualifications, and they can and will write anything.

#### Hold the line- no recovery- they made the strategic decision to not read warranted cards in the AC- this is a strategic choice based on AC missteps which you should not allow- anything else incentivizes sandbagging, reduces clash, and skews 2NR time

### Death OWs 1NR

#### Death outweighs:

#### 1. Death is the only fixed ontological state- there is only a risk marginalized groups aren’t totally devoid of value, and that limited amounts of community and positive experience are possible- death denies that for everyone, which outweighs on scope. It also turns structural violence- the process of extinction results in unnecessary suffering to the worst off

#### 2. It’s the only irreversible impact and none of their offense is coherent without consciousness

#### 3. Killing everyone for ethics is sacrificial logic that justifies gulags and genocide- that’s a DA to the alt. VTL can never be zero, but framing it that way is the absolute pretext for violence