

How Mining Resources in Space Can Put an End to Resource Wars on Earth

Times have once again become intense. It all comes down to the problem of greed - one of the seven deadly sins. The sin of greed never helps anyone, even the person it benefits. Sooner or later, that person, that tycoon, will drown in his or her own avarice, because if he is not careful, it will destroy him.

Don't get me wrong; if he or she uses his wealth wisely and in a productive and beneficial manner, and does not oppress others, then that person will turn to be very prosperous.

This applies to nation-states as well, along with the resources they have, or don't have. This is where the problem lies.

Nations depend on farming and/or industries to thrive, manufacturing products of their own interests with the resources they have. This could be from their own unique artwork to electronics, automobiles, weapons, infrastructure materials, and the list goes on and on.

With the advent of computer technology, more and more precious metals will be required to make these technologies function. This is because computer chips needed for memory and programming are

comprised of these precious metals, among them being gold, platinum, and gallium.

Many countries, such as the United States, Europe, Japan, and China have been running on these resources for years, and other, previously developing countries are also acquiring these new technologies.

Some are able to supply themselves with everything they need. Other countries, and I mean most, are able to trade with still other countries for the materials they require, in a fair, peaceful, and mutually respectful manner. Not only that, but these countries also have or had good diplomatic relations with each other.

So there was no trouble, at least none worth mentioning.

Today, this arrangement is deteriorating. There are problems with leaders becoming more hostile to the rest of the world, and I include the United States, in both roles.

I will not mention any names in this essay, whether they be the country's leaders, any CEO or any financial advisor. What I do have to say is that they are becoming greedier, demanding more resources and wanting to pay less for them, or demanding more money, wanting to be in control of their interests, and wanting some favorable political conditions for their countries that have nothing to do with the trade deal itself.

Some even want to literally own the land where they obtain these minerals, annexing it to their own country.

It all becomes a power game. The resources gives power to those who have them, and the host countries feel that in order for those who do not have these needed resources will have to comply with the supplier's demands, both political and economical.

The other side of the coin is that a country that does not have these resources yet needs them may become desperate - going as far as invading that supplier country, bomb them, destroy their society and then take what they want.

Of course, that depends on how strong and powerful the supplier is. They could also destroy the invader and reduce them to rubble; or they could destroy each other.

The above mentioned examples are happening right now on a small scale, but it could get bigger again. This has happened all throughout human history.

The Arabs have oil. They do not like our support of Israel, and we, the U.S. have resorted to fracking as a way around this debacle. The U.S. has been successful here, acquiring a large amount of oil, but it is severely polluting the environment.

China has rare-Earth minerals vital to our computer systems, but doesn't like our support of Taiwan, an island country China wants to annex.

What are we going to do when China becomes the only country that has and/or controls everything we desperately need? Hold us on puppet strings and make demands of us in which we have to comply?

Africa holds many precious metals, but these countries are ruled by petty dictators, and China and the U.S have their eyes on them, along with many European countries.

We attacked Iraq and Venezuela because of oil, and the U.S. is administered by a president who has no regard for its alliances threatened Greenland because of its rare earth minerals, tearing our entire alliance with Europe apart which has sustained us for 80 years. What's really sad about this is that is totally and completely unnecessary. We don't need to own Greenland for these minerals in order to make a good trade deal with the U.S. We've had these deals for decades, with the U.S. benefitting, so why do we need to change it?

Of course, Russia wants Ukraine for its land, industry, and minerals and is willing to expend literally everything they have to get it, even at massive losses.

So now alliances are falling apart, industrialists are getting greedy and governments are threatening other governments for their resources, all leading up to war.

Humanity hasn't changed, even in the 21st century. Humans are still willing to destroy other countries to get what they want, and what you see in the news proves that.

Is there a way to go beyond war, and still provide everyone, every industry, country, entity with everything they need?

Yes, and it lies 200 miles/320 kilometers up, beyond the Earth's atmosphere, starting from Low Earth Orbit (LEO).

There are three separate locations able to supply everybody with everything they want or need: the lunar surface, near Earth asteroids, and from LEO upward, space junk.

Starting with space junk, there is so much space debris from satellites that no longer function, spent rocket stages, with everything falling apart of satellite crashes, blowing up, so much debris that it will be impossible to live up there.

If we clean it up, we will salvage precious and rare Earth metals from these junk satellites to recycle for other uses. It will also make LEO a lot safer for ships and astronauts.

These elements, such as gold and platinum group metals, are already in the form of shielding, solar panels, and computer chips, and they are salvageable. We can get a hold of these satellites, dismantle them, and salvage any valuable metals we can find. It will be hard work, but there are many obsolete satellites and other forms of space debris up there. All this needs to be cleared of Earth orbit, salvaged and recycled, and this is a good way to start.

There are space laws already on the books restricting this action, and many companies that own these satellites still have a claim on them, but laws can be revised and the above mentioned companies can have a part in salvaging these satellites, or they can turn over all rights to the salvaging companies. In however is decided, this process can be facilitated.

This needs to be done, but we can benefit from this in more ways than one.

The Moon is next, starting with the surface. This is where you can scoop it up and separate elements to use, including oxygen. Helium-3 is a valuable element more precious than gold because it can be used for energy when fusion technology is finally perfected.

Deeper down, way below the lunar surface there are more elements in bigger lodes. Thorium, a rare-Earth element in which

many industries are trying to obtain, is available in large amounts in the lunar highlands to the south of Mare Frigoris.

The Moon has been found to contain the following elements:

Starting the the major elements, we have

Silicon

Iron

Aluminum

Magnesium

Sodium

Potassium

Manganese

Calcium

For the Platinum Group metals, we have:

Platinum

Iridium

Ruthenium

Gold

Gallium

Chromium

Zinc

Palladium

Note: There are other trace elements that are common on Earth, such as Hydrogen, Nitrogen, Carbon, and other, but these are mostly gases and plentiful everywhere on Earth, so for the sake of this essay, these will be omitted.

Also, I have mention there are many valuable uses for Platinum Group Metals in industries, especially in new technologies such as energy, remote sensing, and others, but they will not be covered in this essay, mainly because this is about the element themselves. Uses of them are covered in other sources.

My book, *Building the Space Infrastructure*, mentions using these elements for products in space, but on Earth they could be used by any country that needs them, not just China or Africa.

The availability up there where a country will be able to obtain them can sidestep dealing a country that is hostile to them. By space law, and it is on the books, these elements will be available to any country that wants them. These infinite resources in space should be available to all, with plenty leftover. There should be no need for greed by any country or corporation.

This goes the same for near-Earth asteroids. These are asteroids that cross Earth's orbital path constantly, in the hundreds of thousands daily. They contain iron, nickel, and platinum group metals

and some rare Earth metals needed for Earth bound industries as well as those in space.

The Platinum Group metals in an asteroid include:

Germanium

Gallium

Platinum

Ruthenium

Rhodium

Palladium

Osmium

Iridium

Gold

Many other rare Earth elements are not mentioned here or the Moon, mainly because they have not been discovered, but they may be. We know very little about what is contained in the Moon and asteroids. We will have to venture up there ourselves to find out, but we will.

There are so many minerals up there that there is no need to invade other countries on Earth for them, because there are many times the elements up there than down here, and that includes energy.

I cannot mention space resources without including energy. This is arguably the most dangerous commodity, more likely to cause great wars than any other resource on Earth. Here, I mean oil and natural gas. Coal not so much because it is common, but it does greatly pollute the environment.

The Middle East has a plentiful supply of oil along with Russia and the United States (fracking). The Middle East controls the flow of oil mostly through the Straits of Hormuz, between the Persian Gulf and the Gulf of Oman.

Whoever holds that strait hostage, preventing ships from entering or leaving the Persian Gulf, has control of the world's economy. The downside is that they are subject to attack from other countries. Also, the Middle Eastern countries themselves aren't exactly the best of friends.

There is also Russia, though boycotted, is still selling oil to China and other renegade countries to finance their war against Ukraine. However, Ukraine keeping bombing their refineries and ports, and Russia is losing their grip on the world, greatly.

So we have to cater to countries hostile to the Western World in order to keep the economy going.

Again, there is a way out of this, through space development.

There are at least three way that we know of out of this entanglement, and there may be more:

1. Solar Power Satellites (SPS)
2. Helium-3
3. Fuel cells, manufactured from space resources.

In space, the sun is a lot more powerful than it is on Earth, by a factor of eight. We can build SPS systems in Earth orbit (recommended orbit, 22,300 miles/40,000 kilometers up, always orbiting above one fixed spot on Earth, taking 24 hours to complete one orbit) with solar panels 10 kilometers long. It's too expensive to be launched from Earth, but it can be built with space resources, being the Moon and near-Earth asteroids.

These panels would pick up the sun's rays, 24 hours a day without any cloud cover like on Earth, and beam the energy in the form of microwaves, up to 10 gigawatts, meaning 10 billion watts, down to a receiving antenna, where it then distribute the power to various cities, towns, and industries.

The microwaves would be harmless. Standing next to a receiving antenna is like standing outside of a microwave while in operation. They would not harm birds in flight nor have any effect on aircraft flying through these waves, either.

Helium-3 is found on the surface of the Moon and continues to be replenished by the solar wind. Helium-3 is the element Helium minus one proton.

It can be used in fusion and release a lot of energy in a fusion reaction. However, fusion technology has not yet been perfected, but it is the hope for the future of energy.

Today, Helium-3 is used in medical surgery and to detect nuclear materials in airports, preventing terrorists from smuggling atomic bombs in suitcases.

The Fuel Cell is composed of platinum group metals (PGMs). This is where hydrogen is fed into one end of the cell, the anode, comes in contact with a catalytic surface, composed of a PGM, thereby breaking down the hydrogen atom into positively charged ions and electrons. The electrons pass through a wire powering the device where the fuel cell is connected.

Heat is also generated and can be used to heat the area around the cell or help generate more electricity.

This is great for powering cars, trucks, trains, airplanes, even ships. This could be the new fuel of transportation, completely displacing oil

These are three examples of harnessing energy from space, but there could be more, even an infinite number of ways to do so, since the universe is mostly composed of energy.

So why go to war over a fossil fuel when there is an infinite amount of energy up there, free for the taking?

The cost of extracting all of these metals and these energy sources are expensive, but they do have their payoffs, such as settling and industrializing space, saving Earth's environment, and avoiding war.

There are no benefits to going to war, whether it is over resources, energy, or any other reason. The only results here are the losses of money in the billions, maybe trillions of dollars, money that can be used for more constructive purposes.

There is also the cost in human lives, destruction of cities, and racial hatred that will last for centuries.

Going into space for resources and energy is a lot cheaper and has no downside.

If we are willing to industrialize space and mine the Moon and asteroids, resource wars on Earth have the potential to come to an end because they will become unnecessary. If a country like China refuses to supply the U.S. any rare Earth element that American

industries need, they can simply go to space to obtain them bypassing China all together.

As an added bonus, pollution will greatly decrease and the Earth's natural environment could be restored, because mining and industry will move off Earth into space.

So we have a double benefit: no war, no more pollution.

Space is up there waiting for us to develop and the resources are available for all.

There are laws written down already that no country or any other entity can claim all the resources in space. This is to prevent war.

There is no need to anyway. Any country or industry can come in, take the resources they need and simply leave the rest for someone else to mine.

The infinite resources of space can provide the needs of every human being, every industry, and every country on Earth.

We simply have to not let the sin of greed hinder us.

Alastair Storm Browne

Author's Note: This essay was begun before the War in Iran commenced. Although this was isn't over oil, the U.S. may try to take advantage of this like they did in Venezuela.

We cannot have the attitude of "invade the enemy and take what we want," because this will condemn us in the eyes of the world.

Wars over oil and other resources must stop now - and then we can get on to venturing into space to seek the resources we need, including energy.

This is why we are spending money to venture into space; its cheaper!