**Research Campaign: Cosmic Ray Harvester, Protecting Solar System Environment**

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**Abstract**

Contemporary thought around space travel is that we will get our resources by exploiting other solar bodies. The idea of digging and drilling on the moon and Mars will be environmentally altering. However, cosmic rays offer the chance to get the same resources at likely a cheaper rate as well as more environmentally friendly. Cosmic rays are abundant and have all the elements, albeit in an ionized form. They are there for an environmentally safe manner for us to get resources for space travel.

**1. Introduction**

What can be logically deduced is that the exploration of space will be with humans for the foreseeable future since the space projects of the USA and USSR soon after World War 2. On the date of February 25, 2021, the 1Morning Consult published a poll about a survey it carried out to determine the attitudes towards space of the American people. To quote the Morning Consult, “1 in 3 adults said sending human astronauts to the moon or Mars should be a priority, about 30 points lower than the highest-ranked space research priorities.”. That is a significant figure, people can win elections with 30% of the total population voting for them when only 55% of the population has voted.

What is also significant is that in this poll 49% of the population supports researching to understand space, treading lightly but believing in the future of space.

If it is actions that speak, China recently tested the most 2powerful solid-fuel engine. It has no other reason but to take human beings to space, a huge commitment. China’s commitment does not end with testing the most powerful solid-fuel engine, on 24 August 2021, the 3South China Morning Star reported that China is going to pay scientists to study the feasibility of building an ultra-large spaceship many miles in dimension.

Just taking prestige into the factor, humanity is going to space in a big way given the resources available. These resources come from sound economic policies. People must be allowed to do and create those resources.

It is reasonable to accept that if factors allow, there is a desire for the colonization of Mars. This is not a small thing; it will be a massive relief for this planet. Though the planet possible could accommodate ten times this population if knowledge in all its aspects is respected. The future king of England, 4William, moaned about space tourism and that the best brains are needed to solve problems on planet Earth. What William does not understand is that it is politics and culture in the way of problems on earth. Not just the disrespect for knowledge like unnecessarily using up more land for agriculture because people do not want to change, humans do not need more agricultural land but to use what they have more efficiently. The means are out there, the knowledge is out there, the best brains long gave a solution to for example saving the orangutan, it is politics and culture killing them. The further encroachment of wildlife habitat in Africa is politics, the best minds did deliver on how to use the land properly. At the end of the day, politics is a gun and those with the gun eat first, orangutans, lions, elephants don’t have guns, why bother respect knowledge when it is easier to just kill them, humans don’t respect each other, the one with the gun always robbing the one without a gun. Knowledge is hidden for political and ideological reasons, be it culture, racism, ethnicism, but the knowledge is out there, with or without space to save this planet.

When we talk of environmental disasters, does this culture need to be exported to the solar system and interstellar travel for human beings benefits with all our understanding of science particularly disciplines like atomic and subatomic physics, the knowledge is out there, it is a matter of culture and respect for knowledge, for facts.

**2. Current Thought on Resources for Space Survival**

As we stand today space is difficult. It is difficult in many ways even for the richest of societies, it is the ambition and enthusiasm that keeps countries going. Sputnik was launched by the USSR just after the new year in 1958. To date in 2021 “5South Korea is now trying to become the 10th nation to send a satellite into space with its own technology.”

After achieving the technological triumphs of merely getting into orbit, difficult, some countries you can count with one’s fingers if one makes it up there, plans a trip to Mars with human beings, how are they going to survive. Even just a moon base has tremendous technological difficulties.

Humans will need food in space, it has to be taken with you or grown somehow. 6NASA has made tremendous strides in making humans will at least have the knowledge to grow plants in space as they are successful experiments on the International Space Station.

Oxygen will be needed, it must be carried there or manufactured there. On November 11, 2020, 7BBC announced that “Metalysis will extract oxygen and metal powders from moon rock for construction of a launch pad.” That theoretically solves the oxygen crises. We can’t take too much oxygen from this planet, it is needed here.

Hydrogen will be needed. Again, theoretically, it is abundant and on 28 October 2021 Phys.org had an article about the possibilities of Mars being a great source of hydrogen. To 8quote, “One particular location in the solar system does have an abundant potential source of hydrogen and a relatively weak gravity well—Mars.”

NASA researched extracting gases from the gas giants. To quote 9NASA research “The analyses focused on Uranus and Neptune, as these planets offer vast reservoirs of fuels that are more readily accessible than those from Jupiter and Saturn (as Uranus and Neptune require lower energies needed to attain orbit and present less danger from powerful atmospheric lightning) and, with the advent of nuclear fusion propulsion, may offer us the best option for fast interplanetary travel and the first practical interstellar flight.” Serious thought has gone into thinking about how we are going to get these vital resources in outer space.

Both getting oxygen from moon rocks and hydrogen from Mars involve radically changing the environments of both the moon and Mars. Even getting the hydrogen from gas giants involves altering the environments of those planets. We want to take the same culture and mode of production of extraction and alter the environment of those planets. As if this near environmental catastrophe on planet Earth is not enough of a warning.

**3. Cosmic Rays**

Cosmic Rays are abundant in space. Most known elements can be found in cosmic rays. Quoting a paper from 10Euro physics, “One instrument, built by a French-Danish team, measured the abundance of all elements between boron and zinc (Z = 5 to 30) with very high precision; the second, built by a consortium of US laboratories, has provided, together with the recent UK satellite Ariel VI, the first comprehensive set of data on the composition of the much rarer cosmic ray nuclei between zinc and uranium (Z = 30 to 92).”

“11Hydrogen makes up more than 90% of the interstellar gas and of baryonic matter in general,” why do we need to exploit the environments of other worlds when the same resources are abundant everywhere just in ionized form.

Cosmic Rays have oxygen, more than enough. An informative paper by 12Schlaepfer states “It soon became clear that this anomalous helium component was also accompanied by anomalous nitrogen and oxygen.”. These are partially ionized elements, simpler to make stable theoretically.

**4. Cosmic Ray Harvester**

How do cosmic rays attain their great speed? Schlaepfer states “... trapped by the galactic magnetic field; they have been accelerated to nearly the speed of light,” magnetism has something to do with it, but nobody knows how.

But we should know sooner rather than later because magnetism itself is made up of particles. This was the conclusion of experiments done by the author showing that magnetism always organizes into a wave. The particle associated with magnetism is called a 13khumalon, named fairly after the person who discovered it, the language they speak at home. People have been known to discover Thomson’s gazelles and Rothschilds Giraffe in Africa. At the least nobody knew what was coming out of a lodestone.

But magnetism can control these particles, especially protons/ ionized hydrogen, this is done all the time in particle accelerators/ colliders.

A man-made tunnel can be constructed in space to direct and slow down these cosmic rays. Electrons can then be added to turn the ionized particles into normal elements.

This will be by far more environmentally friendly than digging up rocks on the moon or wasting the little water that is there on Mars. The reality is there would be vast potential to create oxygen to take to an oxygen-depleted atmosphere like that on Mars. Instead of taking this process will give.

One can even take the harvesting of cosmic rays even further, it is all about patience then we get it better than it could have been. Cosmic rays have every type of ionized element, all they need are the corresponding electrons. Should we alter the course of an asteroid when we can get gold and platinum from cosmic rays?

**5. Recommendations**

Though it should be a priority, we must get the physics right. Getting physics right means a bounty for humanity. It is a bounty that follows the current trend, environmentally friendly. Our environment is about to extend to the solar system, must be friendly towards it. Thus, work should be done on making the technology feasible, for theoretically, it has no glitches.

**Conclusion**

This technology assures clean technology as we enter the solar system. What does it matter who thought of it? It is beneficial for all, perfected, technology benefits the solar system, the solar system includes planet Earth, the home base.

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