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SPACE MILITARIZATION AND ITS IMPACT ON CHANGING COMMUNITIES

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ABSTRACT

There is no doubt that technological advancement has been a catalyst for change in communities but with that technology, the bounds of human capacity are ever-changing.
To Understand the current situation it is crucial to examine the different parts of space evolution and its part in changing communities. This report dives deep into its impact on 3 major global perspectives. 1. scientific perspective, 2.The political perspective and 3. The Economic perspective which is the make-up of International Relations. Space development was an idea boosted by the stalemate that was the Cold War. This opportunity in scientific development was seen as a political and military position to assert power and show ballistic military technology and other scientific advancement. The objective of this research report is to break down and analyse the major causes and consequences and further evaluate outer space and its possible contributions to evolution in communities here on Earth in the coming decades and my very own opinions on the impact that several global developments will have.

BACKGROUND

Space can be a curse or a blessing, it can make or break communities. The power of what is to happen with the resources and technology is in the hands of us humans. Each country holds a different outlook on space, from using it as a resource field to creating a battlefield beyond the boundaries of the O-zone. Perspective is key when it comes to the consideration of what beneficial and safe space utilization means.

For centuries, space has been militarised and commercialised and by that, It means that it has been used for national military interests and commercial needs by both private and government organisations. Weaponization has been a huge concern recently meaning the placing of weapons of mass destruction in space as a form of military intimidation and even potential usage. Each country has a different foreign policy regarding the future of space, all extremely differing from the other. Space may be the reason for conflict within nations but it holds truly impactful solutions to issues like resource shortage and non-destructive warfare. What may be a curse to the political community is a boon to the scientific community. Space holds potential for the future but it also holds potential to be the reason mankind sees its end and the conclusion to that lies in the hands of communities here on Earth.

SCIENTIFIC PERSPECTIVE

CONFLICT

The Kesslers syndrome is one of the many theories that might turn into a striking reality if nations continue to launch weapons into space having no regard for the destructive aftermath that is space debris. Kessler's syndrome is a theory put forth in 1978 by scientist Donald. J Kessler, it's a phenomenon in which the amount of junk in orbit around Earth reaches a point where it just creates more and more space debris, causing big problems for satellites, astronauts and mission planners. [1]

The theory has gained popularity in recent times in organisations. Despite this alarming possibility, several organisations continue to launch space missions that could contribute to the **ever-growing issue of space debris collision**. Elon Musk's SpaceX recently requested authorization to send 42,000 satellites into orbit. 12,000 of these were authorised by the US government. [2]Apple and Amazon are among the other major tech companies that are doing the same, though SpaceX has so far made the greatest request.

These acts have often been the reason for conflict between the West and the other world powers like China who have also made available to the public their plans regarding the utilization of space. China's recent anti-satellite test has been one to make a huge contribution to the space debris issues the breakup of the test left almost 950 pieces of debris in the Earth's lower orbit according to NASA's reports(2021, David). The impact this could have on communities on Earth can be detrimental. For Example, Low earth orbit satellites are crucial for the smooth running of communities here on earth and those systems failing could cause huge system issues here on earth in terms of communication, internet and just general safety and could throw us back 100s of years into the past.

SOLUTION

Now the true question that unfolds is that the smooth running of communities here on earth is so crucial that the possibility of the Kessler theory if not eliminated is at least reduced. The main way would be **debris removal from the lower earth orbit** to reduce the

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[1] Lutkevich, Ben. "Kessler Syndrome." TechTarget, 2023, https://www.techtarget.com/whatis/definition/Kessler-Syndrome .
[2] Lutkevich, Ben. "Kessler Syndrome." TechTarget, 2023, https://www.techtarget.com/whatis/definition/Kessler-Syndrome .

possibility of debris collisions. The most recent attempt is the Orbital Sustainability Act of 2022, which four senators from both the Democratic and Republican parties introduced to the US Senate on September 12. The bipartisan legislation provides NASA with $150 million over five years to "establish a demonstration programme for the active remediation of orbital debris." The necessity of "the development of uniform orbital debris standard practices to support a safe and sustainable orbital environment" is also mentioned (2015, D.Swindle). This piece of evidence proves that the process of space debris removal is expensive and can be rather time-consuming but must be given urgent importance to reduce bigger issues in the future.

Several forms of potential debris removals are now being put forth by nations that can be explored further with funding from more economically stable nations. There are several methods for dealing with space debris. Below are 4 Examples of the same.

1. Debris being moved into less populated "disposal" orbits.
2. Spacecraft can also be deorbited through a deliberate forced reentry into Earth's atmosphere through the application of a retarding force, usually through a propulsion system.
3. Have their orbital lifetime reduced by a process that shortens the time that spacecraft and other space objects remain in orbit by speeding up their natural decay
4. proactively removed from rotation when their useful lives are over.[3]

POLITICAL PERSPECTIVE

CONFLICT

International organisations such as The United Nations and their specialised committees like DISEC have for over 50 years promoted an ideology of international disarmament. Resolutions such as the NPT (The Proliferation Treaty)[4], and The Outer Space Treaty[5] have been implemented with the hopes of this goal but haven't been very fruitful due

[3] "Chapter 10: Findings, Conclusions, and Recommendations." The National Academies Press, https://nap.nationalacademies.org/read/4765/chapter/10.
[4] "Non-Proliferation Treaty (NPT)." United Nations Office for Disarmament Affairs,https://disarmament.unoda.org/wmd/nuclear/npt/

[5] "Introduction to the Outer Space Treaty." United Nations Office for Outer Space Affairs,https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html
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to their optional nature. None of the resolutions signed in the UN are legally binding which in the long term has been a huge drawback for global disarmament goals.

Transparency of space usage has been an issue of concern to several space-related committees. The West, the EU specifically has been noted to make efforts to push tides in a more diplomatic direction. In the Dec of 2008, the EU took a step forward in this direction and introduced the EU Code of Conduct for Space which was an open and free treaty**(not legally binding)** which had the goal of promoting a beneficial utilization of space instead of having its focus on a more military forefront(2012, Sachan). To the global community's shock and somewhat disappointment, it was shortly followed by China's Anti-satellite test.

SOLUTION

Now this brings me to my point, Treaties that are optional or as said by the Un" voluntary" and have **no consequences simply do not stick**. Nations are quick to find loopholes in these situations and exploit them, The example given above is one such instance. A political point of view is important when discussing recent space developments. Space exploration has always been somewhat of a race to the top to seize a higher ground and hold the military advantages that come with it. It is clear to the global community that gaining an advantage in outer space is crucial in the coming years. Many missions being conducted by private organisations and even the governments of certain countries have been hidden from the public to gain a strategic advantage.

Now the solution to a problem so highly complex is bound to be just as multidimensional there are just certain factors the global community can take into consideration to drastically improve the quality of the space-related treaties. **Legally binding treaties** are automatically a hundred times more impactful than open treaties and that is something that should be taken into consideration during the drafting of further conventions.

<u>ECONOMIC PERSPECTIVE</u>

CONFLICT

` Here comes another important perspective which is the economic perspective. NASA launched many trips to the Moon in the 1960s and 1970s to investigate the possibility of using lunar resources. The plan was to promote space travel and establish a lunar colony by using resources available on the moon, such as water and helium-3. Using space resources can also assist in addressing some of the most urgent problems facing the planet, including

climate change. One clean, renewable energy source independent of weather patterns and fossil fuels is the development of space-based solar power systems[6](2022, Hemingway)**.** Additionally, developing products and infrastructure for space can lessen the environmental effects of manufacturing on Earth and the depletion of limited resources. Several nations like The UK have invested in solar power initiatives. The UK government invested $3.44 million with the hopes of a possible development[7]. **A huge issue with growing communities is the need for more potential resources** for the newer generations. The answer to this issue could be space mining.

SOLUTION

Conventional underground mining techniques, which discharge hazardous substances like lead and arsenic into rivers and exacerbate acid mine drainage, would be eliminated if asteroids were mined instead of rocks[8]. **Asteroid mining** may facilitate the development of solar power satellites, a potentially reliable renewable energy source(2020, K.Rambabu)
. An increasing worry about global water scarcity has led to the majority of the advancements in asteroid mining technology being concentrated on water extraction. The issue with asteroid mining is that it remains mostly hypothetical due to unbelievably high costs.

There will be many difficulties in terms of funding and technology that will act as barriers to space utilisation and extracting resources to make it economically beneficial and viable. The economic benefits far outweigh the disadvantages but the lack of technological equipment and financial difficulties are what leave this outcome with more to be desired.

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[6] Jaynes, Cristen Hemingway. "Solar farms in space: electricity to Earth, energy & climate change." World Economic Forum, 9 Nov. 2022,https://www.weforum.org/agenda/2022/11/solar-farms-in-space-electricity-to-earth-energy-climate-change/

[7] Jaynes, Cristen Hemingway. "Solar farms in space: electricity to Earth, energy & climate change." World Economic Forum, 9 Nov. 2022,https://www.weforum.org/agenda/2022/11/solar-farms-in-space-electricity-to-earth-energy-climate-change/

[8] Rambabu, K. "Biological remediation of acid mine drainage: Review of past trends and current outlook." PubMed Central, 19 March 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9488087/.