Committee: Committee on the Peaceful Uses of Outer Space (COPUOS)
Issue: International legal framework for space exploration.
Student Officer: Athanasios Ntatsis
Position: Co-Chair

PERSONAL INTRODUCTION

Dear Delegates,

Hello, my name is Thanasis Ntatsis, I am a junior at Arsakeio Tositseia School of Ioannina, and will be your co-chair for this year's ATS MUN.

As you probably know, we will be talking about space, specifically space law and space exploration as a whole. A difficult topic, complicated, to say the least but it doesn't have to be. I have created a study guide I can only hope will help during your studying period.

Having been a delegate myself I know first hand how it is to be lost trying to understand the task at hand, so if at any point one of you need help, reach out to me via email and I will try my very best to answer any possible questions. Writing this, my main goal was to make a simple easy to understand study guide and I hope I have succeeded.

The purpose of this study guide is not only to help with your studying, but to help with further research you may need. You will notice I have linked a few articles in various parts of the guide. Reading them is not mandatory but I would suggest you do so because even though this guide is supposed to be well rounded it does not mean it covers everything, after all that is near impossible. So do your own research, it will be useful.

I see myself as a friendly guy, being strict is not one of my character traits so like i previously mentioned don't hesitate to contact me with any questions you may have: athanasiosntatsis@gmail.com.

Good luck,
Athanasios Ntatsis

INTRODUCTION

International and domestic agreements, rules, and concepts that control space-related activity are referred to as space law. Space law covers a wide range of topics, including space exploration, damage liability, weapon use, rescue operations, environmental protection, information sharing, new technology, and ethics. Administrative law, intellectual property law, arms control law, insurance law, environmental law, criminal law, and commercial law are all included in space law.

Space Travel, an accomplishment by humans like no other, has been presenting some problems many aren't taking into consideration. Lucrative, extremely lucrative for humans in either private space flight or for countries on their own. The biggest problems however, are and can continue to be space debris, private spaceflight and gender inequality. Few of many but I see these as the most disruptive for

the near future. Can because it is fixable, the problems can be resolved but that doesn't mean it will if a solution isn't present soon. We have to ask ourselves however why, why are there problems like this in the first place. Providing laws and regulations for space. Why is that so difficult? Because we are talking about creating a solution for something we know virtually nothing about. While writing and conversing about the problem is all fine and good, real change needs to be made. Can you find the next best solution? Or will the unknown always be one step ahead of us.

DEFINITION OF KEY TERMS

Legislation

The exercise of the power and function of formulating rules (such as laws) that have legal force because they are issued by a state or other organization's official organ.

Celestial Body

The term celestial body encompasses the entire known and unknown universe. A celestial body is defined as any natural body that exists outside of the Earth's atmosphere.

Space Exploration

The use of astronomy and space technology to explore outer space is known as space exploration. While astronomers use telescopes to explore space, physical exploration is done by both unmanned robotic space probes and human flights. One of the primary sources for space science is space exploration, which is similar to astronomy in its classical form.

Space Debris

Space debris, also called space junk, is artificial material that is orbiting earth but is no longer functional. This material can be as large as a discarded rocket stage or as small as a microscopic chip of paint. Much of the debris is in low Earth orbit, within 2,000 km (1,200 miles) of Earth's surface; however, some debris can be found in geostationary orbit 35,786 km (22,236 miles) above the Equator.

BACKGROUND INFORMATION

Space Debris

From the launch of Sputnik I in 1957, when humans first entered space, orbital debris began to build. By 2020, over 34,000 bits of debris 10 cm in diameter or bigger, 900,000 objects 1 cm to 10 cm, and more than 128,000,000 fragments under 1 cm have joined those 2,200 active satellites. The junk in Earth's orbit weighs in at over 7 million kilograms. The near-Earth space environment has much more debris, which is too small to track but large enough to imperil human spaceflight and robotic missions. Because both the

debris and the spacecraft are traveling at such high speeds (about 15,700 mph in low Earth orbit), even a little collision might cause serious problems.

The threat of collisions with space debris is taken seriously by NASA, which has an extensive list of procedures for dealing with each conceivable collision threat to the space station. These guidelines, which are part of a larger set of decision-making aids known as flight rules, describe when the expected approach of a piece of debris raises the risk of a collision to the point where evasive action or other safeguards are required to protect the crew's safety.

NASA and other US organizations sought to reduce the growth of debris in the 1980s. McDonnell Douglas tried one option for the Delta launch vehicle, which involved moving the rocket away from the payload and venting any residual propellant in the tanks. This removed one source of pressure buildup in the tanks, which had previously caused them to explode, resulting in more orbital debris. Other countries were slower to adopt this strategy, and the problem escalated throughout the decade, owing in part to a number of launches by the Soviet Union.

It is not surprising how by far most space junk is provided by the three major countries that are involved in the space race. Russia, The US and China. However, even though Russia is ahead of every country when it comes to its occupation in space, the USA has the largest amount of space junk itself. That leads to the questionif the US and NASA have set many rules and regulations to combat space debris how come the number is not declining. Maybe providing legislation for all to follow is not a bad idea because as of now it doesn’t look like each country on its own can deal with this problem or is willing to.

How Space Debris can Affect the Future of Space Exploration

Space debris has posed a threat to missions and operations in the past. Just recently space junk has been identified as the cause of all the damages done to the international space station. In fact, many windows were in need of replacement all because of some paint flecks. That same junk can be as large as a softball or as tiny as said flecks of paint. With that being said this isn't the first incident and won't be the last. In fact these incidents are quite common but that doesn't mean it still isn’t a growing problem. Imagine how bad it will get in just a few years since the amount of space junk continues to grow.

The risk of debris to space operations is determined by the type of the operations and the orbital region in which they occur. Because the debris flow faced by a spacecraft varies substantially with orbital altitude and, to a lesser extent, orbital inclination, the orbital region is critical. The nature of the operations is important because a piece of debris that can cause catastrophic damage to one type of spacecraft may cause little harm to another with a different configuration or orbital attitude.

There are a lot of variables considering the damage space debris can do but overall this growing problem causes a threat to spacecraft and the astronauts in it.

Fortunately, however, space trash does not now pose a significant threat to our exploration endeavors. Its greatest threat is to other satellites in orbit. To avoid being hit and perhaps damaged or destroyed, these spacecraft must shift out of the way of all this incoming space trash. Every year, hundreds of collision

avoidance maneuvers are carried out by all satellites, including the International Space Station (ISS), where humans live.

How Does Space Debris Affect the Environment

According to researchers, roughly 80 tons of space junk reaches Earth's atmosphere each year, but most of it burns up in the atmosphere or falls to Earth without anybody knowing. Unfortunately, just because something burns doesn't mean it's gone forever. Although friction-induced heat may break down and melt these particles of debris, the component compounds are still released into the atmosphere. When some composite metals and polymers re-enter the atmosphere and burn up, chemical reactions produce nitric oxide, which depletes the ozone. So the question remains: Are we doing enough to stop the growing problem of space debris.

Gender Inequality in Space Exploration

Despite the significant public appearance of the astronauts' wives, no women were among the Apollo crew members, or any of NASA's astronauts for Project Mercury. The 508 first candidates were chosen from a pool of active duty military test pilots—a certification that was previously unavailable to women, who were still prohibited from Air Force training schools.

Despite the fact that women were initially barred from NASA's program, the doctor in charge of Project Mercury's psychological and physical evaluations privately assessed female pilots as well. On average, they outperformed the astronaut class in the same strenuous fitness tests. The group was dubbed the "First Lady Astronaut Trainees" by Jerrie Cobb, who was the first to pass all three rounds of the examinations. Cobb traveled to Washington to push Congress to resume the testing when NASA refused to continue them. Participants were invited to appear before a special subcommittee of the House Committee on Science and Astronautics hearing in July 1962. John Glenn stated at the hearing that NASA recruitment rules effectively prevented women from qualifying, but the hearing took place two years before the 1964 Civil Rights Act outlawed this form of discrimination in the workplace, and no action was taken.

Women were initially excluded from NASA's space program, which resulted in a legacy of underrepresentation in space policy, security, and exploration that still exists today. Although the Astronaut Class at NASA is now 50% female, the space program nevertheless bears the scars of its male-dominated past. The first all-female spacewalk on the International Space Station was canceled by NASA in March. What is the explanation for this? There was simply room for one medium-sized spacesuit. The spacesuit incident emphasizes the need to close the gender gap across science, technology, engineering, and mathematics (STEM) domains, not just in space policy and exploration. But that conversation is for another time, not now.

Private spaceflight

In 1982, Space Services Incorporated became the first private company to launch a rocket into space. The Commercial Space Launch Act, signed by President Ronald Reagan in 1984, fostered the formation of

private spaceflight businesses. The list of achievements gradually grew into a full-fledged movement. Space Services Inc. had successfully launched a second commercially licensed satellite into orbit by 1989. By 1992, TsSKB-Progress, a Russian corporation, had developed a capsule that sent gifts to the United States via rocket. By the year 2000, MirCorp, a Russian private space technology company, had made the first non-government-funded manned space flight.

Concerns about the environmental implications of billionaires' space flights have risen as they vow to extend the market for private space flights.

Blue Origin's Jeff Bezos joined Virgin Galactic's Richard Branson, who became the first billionaire space firm owner to fly his own spacecraft on July 11 with his private company's inaugural passenger voyage. Jeff Bezos was held weightless in the lowest rung of suborbital space for four minutes. That's nearly $1.38 billion each minute for the world's richest billionaire, who has put at least $5.5 billion into his space enterprise, Blue Origin. But that is only the tip of the iceberg. Many other private corporations just like Virgin Galactic will be attempting such space operations and the cost can only be presumed to get higher. Bezos' July 20 voyage was quite environmentally benign, reaching a height of 66 miles, making it the first private spaceship to exceed the internationally acknowledged threshold of space. Blue Origin has bragged about their liquid hydrogen/liquid oxygen engine, citing studies that indicate it causes 100 times less Ozone layer loss and 750 times less climate forcing than Virgin Galactic's air-launched hybrid engine. The water emitted by rocket exhaust could increase the number of clouds, affecting the upper atmospheric layers. Many scientists however are still unconcerned about the impact at the time, given the low number of private rocket launches. With that being said however private rocket launches will be on the rise with more and more companies expanding their wings into spaceflight. It doesn’t necessarily have to be a bad thing but there is too much risk if it stays uncontrolled like this. That is why providing legislation for problems concerning space travel is necessary.

International Geophysical Year

International Geophysical Year (IGY), a worldwide program of geophysical research that was conducted from July 1957 to December 1958. IGY was directed toward a systematic study of the Earth and its planetary environment. The IGY encompassed research in 11 fields of geophysics: aurora and airglow, cosmic rays, geomagnetism, glaciology, gravity, ionospheric physics, longitude and latitude determinations, meteorology, oceanography, seismology, and solar activity.

The Chicago Convention

The United Nations established the International Civil Aviation Organization (ICAO), often known as the Chicago Convention, as a specialized entity tasked with administering international air transport. Airspace restrictions, aircraft registration standards, safety, security, and sustainability rules, as well as the signatories' air travel rights, are all spelled out in the Convention. It also contains rules relating to taxation.

Space law dates back to 1919, when international law acknowledged each country's sovereignty over the airspace directly over its territory, which was later reaffirmed in 1944 at the Chicago Convention. During the Cold War, the International Council of Scientific Unions was prompted to adopt an

international space strategy in response to the emergence of domestic space projects (i.e., the International Geophysical Year). The Soviet Union launched Sputnik 1, the world's first artificial satellite, in 1957, prompting Congress to pass the Space Act, which established the National Aeronautics and Space Administration (NASA).

Since the end of the Cold War, the "Outer Space Treaty" and the International Telecommunications Union have served as the constitutional legal framework and set of rules and procedures governing space law. Furthermore, the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and its Subcommittees are responsible for debating issues of international space law and policy.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

United States of America (USA)

Between 1961 and 1963, Project Mercury, the first American space program, performed 25 flights, six of which carried astronauts. The program's goals included orbiting a human ship around Earth, investigating a person's ability to function in space, and successfully recovering both the astronaut and the spacecraft. To make the project possible, more than 2 million workers from government agencies and the aerospace sector pooled their skills, initiative, and experience. Mercury demonstrated that humans could function in weightlessness for up to 34 hours. The US went on to start space exploration programs like the Gemini program, the infamous Apollo and Skylab which ended up paving the way for the international space station.

The United States presently ranks first among the top countries in space exploration with over 30% of all operating spacecraft in orbit around Earth. In February 1958, the country launched its first satellite into orbit, and it now has a vast fleet of communications, electronic intelligence, missile detection, weather, technology, navigation, and surveillance satellites.

The National Space Policy outlines the country's commitment to leading in the responsible and constructive use of space, encouraging a thriving commercial space industry, returning Americans to the Moon, preparing for Mars, leading in exploration, and defending US and allied space interests. The National Space Policy believes that a thriving, innovative, and competitive commercial space industry is essential for economic growth, prosperity, and long-term American leadership in space. It commits the US to encouraging the development of a commercial space sector in the United States that serves the country's interests, is globally competitive, and enhances American leadership in the creation of new markets and innovation-driven entrepreneurship.[1]

[1] https://www.space.commerce.gov/policy/national-space-policy/
https://www.un.org/disarmament/wp-content/uploads/2017/04/China-E-In-extenso.pdf

People's Republic of China (PRC)

China's official space agency is the China National Space Administration. It is in charge of the national space program, as well as space planning and development.

In 1992, China launched its own human spaceflight program. Its spaceship, dubbed Shenzhou, was based on Russia's tried-and-true Soyuz design, although it was mainly reliant on Chinese-developed technologies and production. On Oct. 15, 2003, the CNSA launched China's first taikonaut (astronaut), Yang Liwei, into orbit after four years of unmanned spacecraft tests. After the Soviet Union and the United States, it became the third country to achieve human spaceflight.

China places a high value on transparency and confidence-building measures in space activities and has been a vocal supporter of UN efforts in this area. The UN resolutions on Transparency and Confidence-Building Measures in Space Activities have China as a co-sponsor. In 2015, China participated in the first joint meeting of the UN General Assembly's First and Fourth Committees and took part in the COPUOS conversation on "the Guidelines for the Long-Term Sustainability of Outer Space Activities," with the aim of encouraging peace, safety, and long-term sustainable development in outer space.

Russian Federation

The Roscosmos State Organization for Space Activities, or Roscosmos, is a Russian state corporation in charge of the Russian Federation's space travel and cosmonautics programs.

The Soviets took German scientists and rockets, and in the early 1950s, they began experimenting with animal launches, albeit none of them made it into space. Nonetheless, they were the initial moves in the space race, launching both countries into a race to the stars. When the Soviets launched Sputnik 1 into orbit on October 4, 1957, they won the first round of the race. It was a big victory for Soviet pride and propaganda, as well as a serious setback for the young US space program. The Soviets followed up with the launch of Yuri Gagarin, the first man into space, in 1961. Then they sent the first woman into space (Valentina Tereshkova, 1963) and Alexei Leonov performed the first spacewalk in 1965.

The Soviets also appeared to have a good chance of landing the first man on the Moon. However, issues arose, and both lunar missions were postponed due to technological difficulties. The Soviet program suffered its first major setback when disaster struck. In 1967, cosmonaut Vladimir Komarov died when the parachute that was supposed to gently land his Soyuz 1 capsule on the ground failed to open, killing him. It was the first time in history that a man died in space while in flight, and it was a major embarrassment for the program. Problems with the Soviet N1 rocket continued to rise, delaying planned moon missions. After defeating the Soviet Union on the Moon, the United States focused on sending unmanned probes to the Moon and Venus.

TIMELINE OF EVENTS

1963	The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space
1979	Agreement Governing the Activities of States on the Moon and Other Celestial Bodies
1982	The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting
1986	The Principles Relating to Remote Sensing of the Earth from Outer Space
1992	The Principles Relevant to the Use of Nuclear Power Sources in Outer Space
1996	The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries

UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

Five declarations and legal principles were adopted by the United Nations General Assembly, encouraging the application of international rules as well as unifying communication between countries. The following are the five statements and principles:

o The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space (1963)

All space exploration shall be carried out with noble goals in mind, and all States that obey international law will be permitted to participate. There is no right for any nation to claim ownership of space or any celestial object. Space operations must abide by international law, and countries involved in these activities must be accountable for the governmental and non-governmental bodies involved. The laws of the country to which they belong apply to both people and items sent into space. Objects, parts, and components discovered outside of a country's jurisdiction shall be

returned once they have been identified. If a country launches an object into space, it is responsible for any international consequences.

o Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979)

The agreement exists to foster outer space exploration while also ensuring that the moon and other celestial bodies remain in pristine form for mankind's common heritage, which means that no government can claim sovereignty over any area of space. On an equal footing, all countries should be able to conduct research on the moon and other celestial bodies. All sorts of weapons of mass destruction, including nuclear weapons, as well as military locations, are expressly prohibited by the agreement. All-State Parties may conduct their operations beneath the surface of the moon or other celestial body, as long as precautions are taken to prevent pollution, according to the United Nations resolution. All acts in space must be attributed to a country, and any third-party damage to another country's equipment or facilities must be fully repaid to that country. Any discovery of a potentially dangerous hazard, such as a radioactive area, must be immediately reported to the UNSecretary-General and the rest of the international scientific community.

After 30 days, all space missions lasting more than 60 days must report their progress to the UN Secretary-General and the scientific community. Space samples must be made available to the scientific community as soon as possible. Meteorites that fall to Earth by natural means are excluded from the pact. The pact has yet to be ratified by a single country that conducts its own space missions. Because none of the nations that actually go into space signed or approved the agreement, it is likely that the 'Moon Treaty was really a failure.

o The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (1982)

Such activities must be carried out in conformity with the sovereign rights of states. Said activities should promote the free exchange of information and knowledge in cultural and scientific fields, aid in educational, social, and economic development, more specifically in developing countries, for people’s quality of life to improve, and provide recreation while respecting the political and cultural integrity of said states. All states have equal rights to engage in these activities and must take responsibility for everything that occurs inside their jurisdiction.

o The Principles Relating to Remote Sensing of the Earth from Outer Space (1986)

(1) The word "remote sensing" refers to the process of sensing the Earth's surface from space using the properties of electromagnetic waves generated, reflected, or diffracted by the sensed objects in order to improve natural resource management, land use, and environmental protection.

(2) The word "primary data" refers to the raw data collected by remote sensors carried by a space object and transmitted or delivered to the ground via telemetry in the form of electromagnetic signals, photographic film, magnetic tape, or other means from space.
(3) The term "processed data" refers to the goods created by processing primary data in order to make it usable.
(4) The term "analyzed information" refers to data that has been interpreted, as well as data and knowledge from other sources
(5) The term "remote sensing activities" refers to the operation of remote sensing space systems, primary data collection and storage stations, and activities related to processing, interpreting, and disseminating processed data.

o The Principles Relevant to the Use of Nuclear Power Sources in Outer Space (1992)

Individuals, populations, and the biosphere must be protected from radioactive dangers by states launching space objects with nuclear power sources on board. The design and use of space objects having nuclear power sources on board must assure, with a high degree of certainty, that the dangers are kept below acceptable levels under anticipated operational or accidental scenarios.

o The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (1996)

On a fair and mutually acceptable basis, states are free to define all aspects of their participation in international cooperation in the exploration and use of outer space. All States, particularly those with relevant space capabilities and plans for the exploration and usage of space, must contribute to the development and promotion of fair and mutually acceptable international cooperation. Rising countries and countries with developing space programs should pay special attention to the benefits and interests gained from international cooperation with countries that have more mature space capabilities in this respect.

International Treaties

The COPUOS has negotiated and drafted a total of five international treaties:

o The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the "Outer Space Treaty").

The Outer Space Treaty is the cornerstone of international space law. Its principles include prohibiting states that have signed the treaty from deploying or stationing weapons of mass destruction in Earth orbit, on the Moon, or any other celestial body. It prohibits the use of the Moon and other celestial bodies for weapon testing, military exercises, or the establishment of military bases, facilities, and fortifications. However, because the treaty does not prohibit the use of conventional weapons in space, some extremely destructive attack techniques, like kinetic bombardment, may still be deployed. The treaty further stipulates that space exploration should be

carried out for the benefit of all countries and that space should be open for exploration and utilization by all states. The Outer Space Convention, formally the Treaty on Principles Governing States' Activities in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, is an international treaty that governs space exploration and use. On January 27, 1967, the treaty was opened for signature in the United States, the United Kingdom, and the Soviet Union, and it went into effect on October 10, 1967. As of February 2021, 111 countries have signed but have not yet ratified the treaty, while another 23 have signed but not yet ratified it. Additionally, prior to the United Nations General Assembly's vote in 1971 to transfer China's seat to the People's Republic of China (PRC), the Republic of China in Taiwan, which is currently recognized by 14 UN member states, ratified the treaty.

o The 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement").

The Rescue Agreement effectively states that any state that is a signatory must provide all reasonable assistance in rescuing the crew of a spacecraft that has landed within its territory, whether by accident, distress, emergency, or unintended landing. If the crisis occurs outside the territory of any nation, every state party in a position to assist in the search and rescue operation shall do so if necessary. The Rescue Agreement, also known as the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, is an international agreement that establishes governments' rights and obligations for the rescue of individuals in space. The Agreement was established by a unanimous decision of the United Nations General Assembly on December 19, 1967 (Resolution 2345 (XXII)). It went into effect on December 3, 1968. Its requirements expand on the 1967 Outer Space Treaty's Article V rescue provisions..

o The 1972 Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention").

All space objects launched within a country's borders are subject to international accountability. This means that regardless of who launches the space object, if it is launched from State A's territory or facility, or if State A caused the launch to occur, State A is completely accountable for any damages caused by the space object. The Space Liability Convention, also known as the Convention on International Liability for Damage Caused by Space Objects, is a convention from 1972 that extends on the liability standards established by the Outer Space Treaty of 1967. The lone claim raised under the Convention was in 1978, when the nuclear-powered Soviet satellite Kosmos 954 crashed onto Canadian territory.

o The 1975 Convention on Registration of Objects Launched into Outer Space (the "Registration Convention").

The convention mandates states to provide the United Nations with information about each space object's orbit. As a result of a General Assembly Resolution in 1962, the United Nations had already

established a registry of launches. The United Nations General Assembly enacted the Convention on Registration of Objects Launched into Outer Space (often known as the Registration Convention) in 1974, and it went into effect in 1976. It had been approved by 70 states as of December 2018.

o The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the "Moon Treaty").

The Moon Treaty puts forth a number of provisions in 21 articles. According to Article 1 of the treaty, the Moon should be used for the benefit of all nations and people of the world. It adds that lunar resources are "not susceptible to national acquisition through claim of sovereignty, usage or occupancy, or any other way." It also expresses a desire for the Moon's resources to be used for peaceful reasons only, rather than being a source of global conflict. The treaty contains several provisions to that end, some of which are listed below:

- The use of celestial bodies for military purposes is prohibited, including weapon testing, nuclear weapons in orbit, and military outposts. It is not illegal to use military troops for scientific study or other peaceful activities. (Article 3.4)
- Establishes a legal framework for international collaboration, including appropriate processes, to govern the responsible exploitation of the Moon's natural resources. (Article 11.5)
- The presence of employees or equipment on or below the surface does not confer ownership rights. (Article 11)
- Any party, without discrimination, shall be free to conduct scientific research, exploration, and utilization on the Moon. (Article 6) It is expected that samples collected during study will be made available for research to all countries and scientific groups. (Article 6.2)
- Shall swiftly notify the United Nations and the general public of any phenomena that may jeopardize human life or health, as well as any evidence of extraterrestrial life. (Article 5.3)

The Moon Treaty or Moon Agreement, also known as the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, is a multilateral treaty that grants participant countries sovereignty over all celestial bodies (including their orbits). As a result, all activities, including the UN Charter, would be compliant with international law. No state that engages in or plans to engage in self-launched human spaceflight has approved it, including the United States, Russia (the Soviet Union), and the People's Republic of China.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Space Debris

Cleanup solutions have been in the works for a long time. Japan's space agency launched a 700-meter tether into space in 2016 in an attempt to slow down and deflect space debris. RemoveDebris, a technology developed in 2018, successfully cast a net around a mock satellite.

Gender Inequality in Space Exploration

Gender inequality is not a simple issue. In fact, a few paragraphs can't even cover the tip of the iceberg when it comes to the actual roots of the issue. But, since that is the task at hand let's talk about what has been done briefly to help fix this problem. Just like it was previously noted in the gender inequality subsection NASA had attempted to bring women into space in fact it was supposed to be the first all-woman space team but it did get canceled. The Soviets however were impressive in their attempts to bring the first woman to space and they were successful at it. Astronaut Valentina Tereshkova was the first woman in space to make a huge impact on the movement to bring equality to space. Now were these attempts strictly for the purpose of showing equality in the field? It is debatable but the important thing is that real change has been made.

POSSIBLE SOLUTIONS

Space Debris

One possible solution not to space travel itself but with space debris has been found. Now it has not been tested yet but it shows promise and any attempt is a good attempt. A demonstration mission to test a concept for cleaning up space junk launched from Kazakhstan's Baikonur Cosmodrome. The project, known as ELSA-d, will demonstrate technology that could aid in the capture of space trash, the millions of bits of orbital debris that float above Earth. The spacecraft attempts to attach itself to dead satellites and propel them toward Earth, where they will burn up in the atmosphere. The expedition, which will be based in the United Kingdom, will repeat the catch and release procedure over the course of six months. The purpose is to show that the servicer satellite can track down and dock with its target in a variety of scenarios. The spacecraft isn't meant to catch defunct satellites already in orbit, but rather future satellites with docking plates that work with the spacecraft. That is only one of the possible solutions for this problem and it is still in development but shows promise.

The European Space Agency also wants to launch a self-destructing robot into orbit in 2025, dubbed a "space vacuum cleaner" by the organization's former director-general.

We just took a look at a possible solution based in the UK and the European Space Agency. Both promising in their own way but clearly not enough yet. What else could help? How will it differ from the rest and make that difference? Equally important is the question of who will take action and be the first to solve the puzzle, the puzzle that goes by the name of Space Junk. Here we see possible solutions, nothing more, and these actions aren't happening fast enough, at least not as fast as the general and growing problem of space debris is.

Gender Inequality in Space Exploration

As we approach the 50th anniversary of Apollo 11's lunar landing NASA has launched Artemis. By 2024, the program hopes to return astronauts to the moon's surface and send a woman to the moon. However, as previous space programs have shown, defying gravity is nothing compared to defying inequality. The

challenge for NASA and Americans as we enter a new era of exploration will be to guarantee that women are included as equal partners and recognized for their achievements. The question remains, however, how can we ensure that this will in fact happen? How can we make sure that women are always included in the conversation and see them as equal in a predominantly male field? Will this be the start of a new era of space exploration?

Gender inequality is a difficult topic to try and deconstruct. Many factors have to be taken into consideration when talking about such a topic. We can see organizations such as NASA being the first to take charge in the future of this field in space. Who can truly lead the race however? Which country, organisation or even private company makes the difference that will change the future?

CONCLUSION

Provisions, treaties are all a dime a dozen if nothing gets affected by them. It is good to know them, understand them and their guidelines but the core problem is how new and uncertain space travel is. Rushing things without research in new territory is not only risky but might leave irreversible damage to the still unknown either that is commercial space flight, the environment or even the hazard towards space operations. That is why legislation is important, that is why we need to make a difference because if we don't, this conversation will be useless before it even begins.

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