

SSUNS 2016

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Country: Peru

Topic 1: The Environment and Space Activity

The space industry and manufacturing as well as space management consists of economic activities relating to all animate and inanimate objects entering or going beyond the Earth's orbit. This complex industry involves international, national, and private organizations that all contribute to the issue of space debris and pollution. Even though not all countries in the world manage government or private space agencies, they all play part to polluting Earth's atmosphere. Developed countries such as the United States, Russia, and China hold most of the responsibility for contaminating the Earth's orbit. In recent years universities such as the University of Massachusetts, Colorado State University, and Pontificia Universidad Catolica del Peru have sent satellites into space with the help of another country's organization.

The world has only had access to space for over half a century and this privilege is already in jeopardy due to the excess amount of space debris in the Earth's orbit. Recently, the Air Force Space Command's Space Surveillance Network (SSN) tracks over 3,000 un operating payload debris, over 1,600 rocket bodies, approximately 7,000 pieces of fragmentation and as of 2010 tracked over 21,000 manufactured objects in the Earth's orbit. In accordance to the findings of the SSN, the United Nations Office for Outer Space Affairs (UNOOSA) has discovered that "only 1,400 out of the 19,000 artificial objects presently being tracked in Earth orbit are functional satellites" (Robert.wickramatunga). Approximately 7.4% of the fabricated objects in orbit are operating and the 92.4% of discontinued missions are floating around in space waiting for a collision with another object. These impending collisions have happened before and are extremely dangerous especially to spacecrafts containing people. In addition to space pollution, the earth's stratosphere contains a build up of soot from rocket launches and aircrafts which takes in sunlight as well as adding thermal energy to the atmosphere. In earth's orbit there are ten billion to one quadrillion particles called microparticulate matter, which are particles from propellant and gases.

Due to the fact that there are numerous problems involving space pollution, the United Nations' General Assembly adopted the Space Debris Mitigations Guidelines of the Committee on the Peaceful Uses of Outer Space in 2008. This was adopted to aid and promote the removal of un-operating spacecraft and limit long-term spacecraft in orbit. Also there is an international mechanism called the European Code of Conduct for Space Debris Mitigation which was issued in 2014. This mechanism calls for aid to remove objects to prevent collisions and limits the number of spacecrafts sent into space.

If the awareness of the increased pollution in space does not increase and the world does not take the situation and its resolutions into action, then all access to space will be unattainable. Technological prosperity will shut down and the world will shift into a new paradigm. Without access to space, all weather forecasts, telecommunications, television transmission and navigation, observations of Earth's resources, global positioning systems, and future knowledge of other life will be lost and never again retained.

## Topic 2: The Militarization of Space and International Law

Space militarization is a current topic because countries are creating more technology to use in space thus signifying an impending space arms race. Even though the United Nations Office for Outer Space Affairs has created and/or adopted resolutions and treaties to prevent an arms race with signatories and ratifiers, not all space-leading countries have ratified the documents. In 1959, over a decade after the idea and mission to have access to space was introduced, the United Nations General Assembly set up the Committee on the Peaceful Uses of Outer Space (COPUOS) to promote peaceful uses of spacecraft, research programmes, and international cooperation and to help solve legal problems in exploration. In 1967 as the idea of access to space wore on and imagination became a reality, the United Nations Outer Space Treaty recommends that space exploration is for the benefit of humankind and nuclear weapons and other massively destructive weapons should not be placed in space. Similar to the Outer Space Treaty, in 1996, the United Nations General Assembly drafted a resolution, 51/44 prevention of an arms race in outer space. This resolution states that outer space along with the moon and celestial bodies should only be used for peaceful purposes. Also the General Assembly adopted the Moon Agreement in 1979 that was specifically dedicated to the use of the moon and celestial bodies for peaceful purposes only. Unlike the other resolutions and treaties, the Moon Agreement only had six countries that both signed and ratified it, including Chile, Morocco, the Netherlands, Peru, the Philippines, and Uruguay. Other countries argued that the terminology was unclear thus making it difficult to agree to.

However, recently there have been reports of space weaponization. There have been observations of a military space shuttle, X-37B, belonging to the United States, an anti-satellite missile, Dong Neng-3, from China, and the mysterious Object 2014-28E from Russia. All three spacecrafts have been sighted in Earth's orbit. The mission of each object is unknown and has civilians as well as governments wondering if there will be a space arms race. Sources have observed the spacecrafts and have come to the conclusion that the X-37B's purpose is to orbit the Earth and land, and Dong Neng-3 is designed to be a direct-ascent missile that collides and destroys satellites. Unlike the spacecrafts belonging to the United States and China, Russia's spacecraft was first thought to be debris. Further observations noticed that the object continued to connect to other Russian space objects whether they were functioning or not. Along the lines of a potential space arms race, the United States rejected a Russian-Led UN proposal to limit space militarization. This proposal was drafted in 2014 but was refused by the US because of unclear terminology such as "space weapons".

Due to recent findings, the possibility of a space arms race has increased but if the International Humanitarian Law (IHL) is able to step in, then the chances of an arms race in space will be reduced. If the IHL is expanded to space, then it can help provide governance and mediation of space arm guidelines and regulations.

### Topic 3: Space Commercialization

Space commercialism are creating a shift into a new paradigm. More and more countries are creating their own national space agencies to improve their economy and resources. Smaller countries like, Saudia Arabia, Brazil, and Indonesia have their own government space agency. Included in the small country space agencies is Peru. Peru's national space agency is known as CONIDA standing for la Comisión Nacional de Investigación y Desarrollo Aeroespacial. Their goal is to “Promover, investigar, desarrollar y difundir ciencia y tecnología espacial, generando productos y servicios que contribuyan al desarrollo socioeconómico y seguridad de la nación, que impulse el posicionamiento espacial en la región” which roughly translates to promoting and investigating space science and technology to produce products that will help their economy. Examples of these products are the commission to send satellites into space to foresee weather disasters, to check on illegal fishing and logging, and to sight fires in the mountains. Also, satellites can undergo mineral mapping to see where the most of one resource is. Although mining for minerals are extremely dangerous to the Earth's ecosystems, asteroid mining is an alternative. Astrophysicists have found that each asteroid that is 10 kilometers in diameter or larger, contains approximately 7,500 tons of platinum, 1.5 million tons of cobalt, and 30 million tons of nickel. Since there are so many resources found in one asteroid, the United States' NASA and Planetary Resources are on a mission for a robotic spacecraft to bring an asteroid back to earth for it to be examined and taken apart.

Space tourism is a new way to go on vacation. Like going on vacation to the Caribbean or to Europe, going to space for fun is a recently developed way to travel and see the world. There are commercialized sub-orbital flights for ordinary civilians. Two spacelines are Virgin Galactic and XCOR Space Expeditions both founded in the United States. Both spacelines travel above the sub-orbital to experience weightlessness. The first space tourist to travel was Dennis Anthony Tito who was an American engineer and multimillionaire to visit the International Space Station (ISS). Also Russia has sent tourists between 2001 and 2009 to the ISS and plans on sending another commercialized space flight to the ISS by 2018.

In 1967, the United Nations' Outer Space Treaty states that "outer space and celestial bodies are free for the exploration and use by all States on a basis of equality and in accordance with international law" under the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space. This explains that even though outer space is neutral in theory of each country's jurisdiction, outer space must be used equally and not as one's own. Outer space must be shared by each state and must not be claimed as their own. The non-jurisdiction of outer space helps build collaboration amongst the countries in space technology. Until long-term regulations for shared space can be developed, countries are going to have to work closely to ensure that space environmental damages are minimized.

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