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**Topic I: The Environment and Space Activity**

A concerning issue that surrounds the topic of the environment of outer space and also outer space activity is space debris. There are currently around 500,00 pieces of debris that are orbiting around the Earth being carefully monitored as they could pose a potential threat to our safety. “Orbiting the Earth” is defined as the path that an object follows as it travels around the Earth. Artificial (man-made) debris that is no longer useful typically orbits the earth. NASA estimates that over 20,000 pieces of materially-large debris are currently in Earth’s orbit. The U.S. Department of Defense is responsible for monitoring the large-sized debris that they separate into risk categories of a) objects larger than 10 cm, and b) objects between 1 cm and 10 cm. NASA is the regulatory agency that enforces whether measures should be taken to manipulate the debris in outer space so that it does not collide with intentional space objects such as satellites etc. However the small sized objects are still dangerous because of the high speeds they can travel through space, and could possibly crash into any satellites orbiting the earth.

In order to rid ourselves of the space debris orbiting our planet, the U.S. Department of Defense in conjunction with NASA, decide if it is necessary to institute a collision avoidance maneuver with any space object and the identified space debris. This; however, is difficult to perform with a high degree of consistency and success, as much of this space debris is impossible to track and can sometimes remain a permanent risk to other beneficial space objects.

This issue can alter the launches of many rockets set to explore outer space. Resources required for the launch of rockets are regulated by the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, also known as the “Outer Space Treaty”. And though the state that launches a rocket is responsible for and has overall control of that rocket, the Outer Space Treaty states that all celestial objects belong to the “common heritage of mankind” and therefore, that state is ultimately liable for any destruction caused by that rocket. Despite this, it is important that each country has a presence in outer space, because it is critical that each country stay informed of new space technologies that can help in areas such as, most importantly, outer space environmental monitoring, weather forecasting, geology and agricultural and forestry development. The Earth is eventually going to be mined of its natural resources and these technologies that explore alternative solutions in outer space will be able to help in the future with solutions such as solar panels and water purification systems. In the foreseeable future, if countries do not keep up with one another in terms of their exploration and research into outer space, the ones that do will have a distinct advantage in terms of providing new-age technologies and solutions for things like power generation, recycling, waste management and energy storage. Each country though must also institute their own set of policies and controls that enforce both environmental prevention and protection of pollution (e.g. China’s Environmental Protection Law). Countries that stay active in both research and environment protection will serve as role models for the those that don’t and will emerge as the stronger, more dominant countries in space exploration. Italy is included in the countries that are currently developing new technologies to assist with space affairs, however they are not one of the major contributors.

**Topic II: Militarization of Space and International Law**

Since the cold war of the 1950’s, the possibility of a space arms race has been elevated. The three most dominant countries in terms of space weapons, USA, Russia and China currently do not have weapons deployed in space but have invented technologies to interfere with other countries’ space equipment. In order to prevent a space arms race, both the ICAO (International Civil Aviation Organization) and the UNOOSA (United Nations Office for Outer Space Affairs) must work together with their member countries to reach an agreement on responsible militarization so that there is never a pronounced power imbalance between the member countries. The more a country takes over in terms of advanced technologies like for e.g., the U.S., the more that will drive other countries to develop better systems to confront the fore-runners and eventually an arms race will become unavoidable. To narrow the imbalance in space technologies between countries, space law will have to enforce its humanitarian goal of maintaining “space as the province of all humankind, the freedom exploration and use of outer space by all states without discrimination, and the principle of non-appropriation of outer space.”

In order to apply the International Humanitarian Law (IHL) to govern the activities in space, (the IHL which is comprised of the principles of: distinction, military necessity and proportionality), the international community must look towards other laws such as the Martens Clause to provide guidance until a set of laws is enacted especially for the IHL. The Martens Clause specifically covers those countries that do not have specific laws and treaties by dictating that the people of the country are protected by virtue of established custom, the principles of humanity and the principles of public conscience. The fact that the IHL does not extend to space activities does not then indicate that the member states are free to for e.g. initiate an arms race amongst themselves.

Italy strongly disagrees with the idea of a space war because they do not have the type of military to combat any enemies in space. Italy’s military consists of mostly the Italian Navy, Military and Air Forces. Also, two of Italy’s main trading partners China and the United States are far more advanced in outer space technology and could start arguments with each other, ultimately affecting Italy’s economy if they are forced to choose a side.

**Topic III: Space Commercialization**

It is an obvious fact that not all countries hold the wealth and resources used to make space travel possible. Only the controlling superpower countries such as the United States, Russia, and China have the most plentiful resources and money to make travelling through space an easy mission. Although these specific countries seem much further ahead in technology than others, smaller countries should have the chance to explore outer space as well. Italy, being a moderately sized country in size and in wealth/resources, definitely has the potential to achieve this goal. However to do this, the country must ensure that they are practicing safe and orderly development of aerospace activities. We ensure that regulators enforce safe and orderly development of aerospace activities through the institution and ongoing practices that are part of the membership within the International Space Station (ISS). The ISS is a collaboration of scientists and engineers from major partnerships forged by the U.S., Russia, Europe, Canada and Japan who are involved in space exploration and other aerospace activities for its member organizations. One way we can support and promote more sustainable aerospace practices especially on an international scale is by furthering the planetary resourcing that has resulted from the operations behind a new aerospace sub-industry called Asteroid Mining. The goal of asteroid mining is to exploit asteroid resources in space in an effort to power new energy on earth. Valuable metals such as platinum are to be extracted via this method. Also, through experimentation with “SpaceX” (Space Exploration Technologies Corporation), the aerospace industry is learning that rockets that cost over $60 Million USD can actually be reusable for science research and space exploration purposes with limited costs of replacement parts and refueling making them extremely efficient and cost-effective to the space program.

As the space tourism industry quickly emerges, we are seeing more and more opportunities and occasions for regular people to visit space not for any scientific reason but only for pure enjoyment and the thrill of being able to do so. Richard Branson’s Virgin Galactic missions are an example of these purely recreational space visits. With more and more of this being planned in the future, the UNOOSA must establish a firm set of policies and procedures to set precedent that these types of space missions are highly regulated for the safety of all of those involved. Both Virgin Galactic and Spaceport America, another aerospace company sponsoring recreational space travel, have postponed these civilian trips to outer space more than once prompting the need for the UNOOSA to oversee this industry with added caution and regulation. We should limit the commercial exploration and development of space tourism travel to those currently destined for the general confines of outer space (e.g., Branson’s Galactic missions). Any future discussion of civilians being part of missions that aim to land them on the moon as the next destination of choice should continue to be researched carefully as precedent will be set for whoever is the first chosen to inhabit the first permanent human outpost on the moon The European Space Agency’s (“ESA”) idea of inhabiting the moon is still years away from materializing but should the trend continue in this manner, the UNOOSA will need to be vigilant to oversee all aspects for protection and rights of civilians.