

*United Nations Committee on  
Peaceful Uses of OUTER Space*

*Addressing the  
Colonization of Trans  
Neptunian Planets*

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*INTRODUCTION*

“The Committee on the Peaceful Uses of Outer Space (COPUOS) was set up by the General Assembly in 1959 to govern the exploration and use of space for the benefit of all humanity: for peace, security and development” (Unoosa, 2018). The Committee reviews international cooperation in peaceful uses of outer space, and studies space-related activities that the UN could undertake. The role of the UN is to encourage space research programs and study the legal problems taking place because of the exploration of outer space (Unoosa, 2018).

Space colonization is known as the permanent, self-sufficient human habitation of regions or areas outside of the Earth. Building colonies in space would require a combination of many factors, including access to space, food, construction materials, energy, transportation, communications, life support, simulated gravity (using steady circular rotation), entertainment, and radiation protection” (New world encyclopedia, 2015). Space law, much like general international law, comprises a variety of international agreements, treaties, conventions, and United Nations General Assembly resolutions as well as rules and regulations of international organizations. (UNOOSA, 2018).

Current investigations on space settlement include Space settlement Nexus proposed by COPUOS, orbital settlements, lunar bases, settling on mars, asteroid mining and other more possible solution investigations to be proposed during the development of the committee.

### *HISTORY OF THE PROBLEM*

The United Nations Office for Outer Space Affairs was initially created as a small expert unit within the United Nations Secretariat to service the ad hoc Committee on the Peaceful Uses of Outer Space, established by the General Assembly in its resolution 1348 (XIII) of 13 December 1958. The unit was moved to work under the Department of Political and Security Council Affairs in 1962 and was transformed into the Outer Space Affairs Division of that Department in 1968. In 1992, the Division was transformed into the Office for Outer Space Affairs within the Department for Political Affairs. In 1993, the

Office was relocated to the United Nations Office at Vienna. At that time, the Office also assumed responsibility for substantive secretariat services to the Legal Subcommittee, which had previously been provided by the Office of Legal Affairs in New York.

Multiple entities and companies with sufficient resources are the ones that are taking the lead in establishing the first ever colonization of trans-Neptunian objects. Some of these organizations include the NASA, SpaceX and Virgin Galactic. Although NASA has shifted their priorities towards other matters and has a different and more limited budget than the latter two, they are still a part of this project, and have continued to explore the solar system and beyond. In the meantime, other private entities (such as SpaceX and Virgin Galactic) have been working on creating better, and bigger engineering for new rockets that might be the ones taking civilization into space. If humans are to find life on other planets, or perhaps a new planet for ourselves, more work needs to be done. “Engineers and scientists need to develop life support systems, find reliable sources of water and fuel, overcome the negative effects living in space has on the body, and find a faster way to travel.” (Tangermann, 2017).

### *CURRENT SITUATION*

“Thousands of people could be living in floating space colonies orbiting the Earth in 20 years” - British Interplanetary Society (BIS). (Ian Johnson, 2017)

Scientists and engineers are already looking into the future value and benefits of living in space. They also are looking for many possible ways to make space colonizations possible and reliable. It is predicted that humans will be very close to Space travel by the end of the century. By following the correct protocol and satisfying our human needs space colonization will be possible too.

Astronauts words about living artificially in space: “Living in space is not the same as living on Earth. Many things are different. Our bodies change in space. The way we stay clean and neat is different too. Learn how astronauts stay strong, clean and neat. The bones begin to get weak and thin. This is very bad for astronauts' bodies.

So, how do astronauts help their muscles and bones? They must exercise in space every day. In space, without the pull of gravity, the blood moves to the upper body and head. Water in the body also does the same thing. It makes the astronauts' faces look puffy. The blood and water are fluids in the body. These fluids move from the bottom of the body to the top. The brain thinks that there are too many fluids. It will tell the body to make less. When the astronauts come back to Earth, they do not have enough fluids in their systems. It takes their bodies a few days to make more blood and water.” (NASA, 2018)

How space has helped the world, and what should be brought to space when colonizing it?

- A. Benefits of agriculture: “Space-based technology is of value to farmers, agronomists, food manufacturers and agricultural policymakers who wish to simultaneously enhance production and profitability. Remote sensing satellites provide key data for monitoring soil, snow cover, drought and crop development. Rainfall assessments from satellites, for example, help farmers plan the timing and amount of irrigation they will need for their crops. Accurate information and analysis can also help predict a region's agricultural output well in advance and can be critical in anticipating and mitigating the effects of food shortages and famines.”
- B. Benefits for health: “Information from remote sensing technologies is, for instance, applied to study the epidemiology of infectious diseases. Data is used to monitor disease patterns, understand environmental triggers for the spread of diseases, predict risk areas and define regions that require disease-control planning. This tele-epidemiology is of particular relevance in developing countries, where infectious diseases remain among the top causes of death. Computer and telecommunications technologies, including satellite communications, also enable the sharing of health and medical expertise. By bringing medical specialists into virtual contact with patients and health

practitioners in remote, rural and underserved areas, telehealth and telemedicine can improve access to medical and health-related services.”

- C. Benefits for the environment: “Human activities have contributed to deforestation, desertification, soil degradation, depletion of the ozone layer and climate change. Space-based technologies, such as remotely sensed data, have enhanced scientific understanding of water cycles, air quality, forests and other aspects of the natural environment. These surveying and monitoring tools provide valuable information on the state of ecosystems, which offers objective support for positive environmental action, including conservation and sustainable resource management.”
- D. Benefits for development: “Economic development, social development and environmental protection form the three pillars of sustainable development. Politicians, academics and leaders in business and science are challenged to use this framework to create lasting, economically effective and healthy societies in a world with finite resources. Earth observation from space is a cost-effective way of obtaining unbiased and essential data on the physical world. Decision makers use this information to understand trends, evaluate needs, and create sustainable development policies and programmes in the best interest of all populations.”
- E. Benefits of natural disasters: “Disasters cause human, material, economic and environmental losses that exceed a community's ability to cope using its own resources. In the past 25 years there has been an increase in the frequency, intensity and unpredictability of disasters, such as earthquakes, hurricanes, floods, landslides and wildfires. Disaster management aims to lessen the impacts of disasters, minimising losses of life and property. Space-based technologies can contribute to all phases of the disaster management cycle, including prevention, preparedness, early warning, response and reconstruction. Before a disaster takes place, remotely sensed data provides information for systems and

models which can predict disasters and provide early warnings. Satellites are also reliable and rapid communication, observation and positioning tools, which become particularly vital to relief and recovery operations when ground based infrastructure is damaged.”

F. Benefits for education: “Access to education increases economic prospects, broadens opportunities for social mobility, and contributes to the empowerment of women and young girls. While remote and rural communities have traditionally struggled with access to education, space-based technologies, such as satellite communications technologies, are helping to bridge this access gap. Technologies like web and videoconferencing and voice over Internet protocol allow educators and students to create virtual classrooms, regardless of physical locations. Other versions of distance learning allow learners to access web based course materials on their own schedules, and communication between students and teachers may take place through e-mails, message boards or video recordings. Tele-education has become so popular that many institutions worldwide now offer distance education options ranging from the simplest instruction to degree and doctoral programs.”

G. Benefits for settlement: “Globally, more people now live in urban than in rural areas. Urban populations are also expected to continue to grow, so that by 2050 approximately two thirds of the world's population will be urban. With increasing and sometimes rapid urbanization, cities frequently face challenges with housing, water, sanitation, electricity, crime, pollution and transportation. Space-based technologies provide unique tools for planning socially and environmentally sustainable human settlements. Central government policymakers, mayors, city planners, engineers and landscape architects are among those who use remote sensing tools that measure and monitor existing patterns of land use and infrastructure development. Not only does this data inform decision makers about current urban projects, complex models can also be constructed to predict future trends in human settlements and urbanization.”

- H. Benefits of transportation: “While some findings may only ever have direct space applications, many more result in spin off technologies, products and services with direct benefits to populations on Earth. Scratch resistant lenses, temper foam, freeze drying technology and improvements to radial tires are simple examples of space spin offs that have already contributed to the fields of health, public safety and transportation.”
- I. Benefits for Communication: “Daily life for a large portion of the world's population now involves sharing information via mobile phones, personal computers and other electronic communication devices. Space-based technologies, namely communications satellites, enable global telecommunications systems by relaying signals with voice, video and data to and from one or many locations. While Earth-based alternatives to space technologies are sometimes possible, space-based technology can often reduce infrastructure requirements and offer more cost effective service delivery options. For instance, instead of constructing a series of transmission and relay towers to broadcast television programmes to far-to-reach places, one satellite dish could be provided to a remote community to pick up broadcast signals sent from a satellite.”
- J. Benefits for human assistance: “Humanitarian assistance and aid are material and logistical actions undertaken to help people in need. Humanitarian assistance endeavours to save lives, reduce suffering, and ensure that human dignity is protected even during times of crisis. Space-based technologies provide unique contributions to the international humanitarian system. Remotely sensed data and space-based communications technologies, for instance, often provide valuable assistance with logistical planning, rapid decision-making and resource allocation and can thereby improve the ways in which humanitarian assistance is designed and delivered.”

K. Benefits of international peace and security: “Since that time the Committee on the Peaceful Uses of Outer Space has evolved, and the Committee and its two Subcommittees have become unique platforms for States to come together to review the scope of international cooperation in peaceful uses of outer space, encourage continued research and the dissemination of information on outer space matters, and study legal question arising from the exploration of outer space. When it comes to space activities, the areas of science, technology, law, policy and security are inherently interlinked. Space technologies often have overlapping civilian and military applications, and choices made about the uses of outer space directly impact international peace, safety and security. The Office for Outer Space Affairs, in its support of the Committee and its Subcommittees, supports constructive and innovative discussions and agreements on measures that all of us, engaging directly in space activities or benefitting from space-based services, can take to ensure the peaceful, safe and secure continuity of space activities.” (UNOOSA, 2018)

Scientists and engineers are studying the benefits and the consequences of living in space. Space exploration is responsible to if not all, most of the acquired needs that we use today. Life as is will be different when trying to colonize space, therefore there should be laws to ensure people's safety and wellbeing. Easier said than done, scientists are working as a international community to make such innovation possible.

## *UN ACTIONS*

A. Space Law: is “the body of law governing space-related activities.” (UNOOSA, 2018). This law has several international agreements, treaties, conventions, resolutions, rules, and regulations. It “is most often associated with the rules, principles and standards of international law appearing in the five international treaties and five sets of principles governing outer space which have been developed under the auspices of the United Nations.” (UNOOSA, 2018). This law regards multiple subjects that relate to space and its use, such as, the preservation of the environment, liability for damages caused by space objects, settlement of disputes, to name a few.



- B.** OOSA: The OOSA (Office for Outer Space Affairs) was created in order to be able to create peaceful resolutions regarding outer space affairs, and resolutions that would be accepted and agreed upon by multiple countries.
- C.** The COPUOS has also had various meetings since its creation in 1959 in order to establish different resolutions that would create a peaceful environment amongst countries debating over outer space affairs. Some of the resolutions made by this committee, have been:
- a. “The launching state”: Any State that “launches or procures the launching of an object into outer space”, and any State “from whose territory or facility an object is launched” (Jessica, 2017).
  - b. Space Debris Mitigation Guidelines: guidelines or rules created by this committee that had to be followed by all participating countries regarding any type of activity in outer space\* (UNOOSA, 2010).
  - c. United Nations Register of Space Objects: this register forces all States to “establish their own national registries and provide information on their space objects to the Secretary-General for inclusion in the United Nations Register.” (UNOOSA, 2018).

*POSSIBLE SOLUTION*

1. Terraforming: Process in which a “hostile environment” is modified in order for it to be adequate for human life to habit it. “This could involve modifying the temperature, atmosphere, surface topography, ecology – or all of the above – in order to make a planet or moon more ‘Earth-like’” (Williams, 2017).

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\*Link to document for Space Debris Mitigation Guidelines created by the UNOOSA: [http://www.unoosa.org/pdf/publications/st\\_space\\_49E.pdf](http://www.unoosa.org/pdf/publications/st_space_49E.pdf)