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MARS TREATYMAKING WORKSHOP RESULTS AND INSIGHTS FROM ISU SSP15

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In light of the expanding robotic and impending crewed exploration and settlement of Mars, participants at the International Space University's 2015 Space Studies Program (SSP) held in Athens, Ohio, will act as governmental delegations at the United Nations to create a draft text representing a new international treaty for Mars. This is the third year the ISU SSP has conducted this Mars Treaty Making Workshop, and is done in conjunction with the SSP's Space Policy, Economics, and Law department. Some nations have ambitious plans for Mars colonization, while others intend to commercially mine the red planet's rich mineral resources. The majority of delegations, however, hold fast the provisions of the 1967 Outer Space Treaty, whose Article II mandates that "outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." Can these tensions be resolved in a single treaty for Mars? This paper will present the findings of the ISU SSP participants, including their impressions and lessons learned from the simulation of an international intergovernmental negotiation session, the drafting, adoption, and related treaty making experience, and the substantive legal innovations for a new legal regime for Mars.

I. INTRODUCTION

The International Space University (ISU) is the world's premier institution of graduate-level education dedicated to space. It provides professionals and graduate students with different cultural and academic backgrounds with the chance to expand their knowledge beyond their main area of interest in order to have a thorough overview and understanding of the current challenges that the space sector has to face. As part of the academic offerings, ISU runs the Space Studies Program (SSP), an intensive nine-week program held each year in a different country. This year SSP, i.e. SSP15, was kindly hosted by Ohio University, Russ College of Engineering and Technology, located in Athens, Ohio, USA, in partnership with the NASA Glenn Research Center.

In the framework of the several activities offered by the program, the Policy, Economics, and Law (PEL) Department gave the opportunity to its participants to

interact with several lecturers, both from the ISU faculty and visiting experts, coming from all around the world and providing their insights on the political and legal aspects that shape current and future space activities, together with their societal impacts, justifications and benefits. Eight participants, with different cultural, academic and professional backgrounds (in accordance to the ISU's 3-I credo, i.e. international, intercultural and interdisciplinary), joined the ISU SSP15 PEL Department: Marius Berge Eide (Norway), Zheng Fang (China), Rémi Gourdon (France), Yuxian Jia (China), Chanwoo Lee (South Korea), Jessica Reinert (USA), Cao Xiuyun (China), Saho Yajima (Japan). The PEL Department Chair was Mr. Michael Davis of Australia, and the PEL Teaching Associate was Francesca Moretto of Italy, both of whom work in the space law field.

The Mars Treaty Making Workshop was proposed by Mr. Christopher Johnson and run as part of the PEL Department activities. The PEL Department participants

were asked to act as governmental delegations at the United Nations (UN) to write a draft text representing a new international treaty for the planet Mars. The Workshop aimed to provide an extremely realistic simulation of an international intergovernmental negotiation session in order to expose the participants to the treaty making and negotiations process as followed by members of the UN COPUOS. Specifically, it simulated the activities carried out by the Legal and Political Subcommittee Working Group on the Draft Treaty for Mars during a hypothetical 780th Meeting of the sixty-seventh session of the UN Committee on the Peaceful Uses of Outer Space (COPUOS), held in Athens, Ohio, on 1-10 July 2025. A dedicated agenda of the session was provided together with the list of participants.

Each of the PEL Department participants was asked to act as the Head(s) of Delegation of a certain member state. Six member states were included, i.e. Austria, France, China, Republic of Korea, Russian Federation, and United States of America. Further people involved in the Workshop were asked to act as non-members maintaining Permanent Observer Missions, i.e. Holy See and European Space Agency (ESA), or to be part of the Secretariat. The time sequence of the Workshop followed the main points of the provided agenda, i.e. opening of the session, adoption of the agenda, statement by the Chair, general exchange of views, Working Group for the Consideration of the Draft Treaty on Mars, other matters, and report of the Committee to the General Assembly.

This paper is structured as follows: a brief discussion of Mars as a focal point of simulated international negotiations is provided (Section II) and the main UN treaties which regulate the space sector are introduced (Section III); a detail description of the Workshop (Section IV), together with impressions and lessons learned by the participants (Section V), is presented.

II. MARS AS A FOCAL POINT OF SIMULATED INTERNATIONAL NEGOTIATIONS

The Mars Treaty Making Workshop was focused on a treaty where the content evoked aspirations among us. It also reminded us of the big gap between the current state of humanity's space exploration and the future envisioned by the previous generations. The topic thus allowed for discussions based on experiences from exploration of the Moon and the Solar system, cold-war cooperation and recent developments in the commercialization of space.

The diverse historical backdrop of these lessons was emphasized by including a truly international, intercultural, and interdisciplinary group of participants and enhanced by the fact that some of us were asked to

represent other geopolitical actors different from our citizenship.

But, why Mars? The 1980s conferences on “The Case for Mars”, especially the third conference in 1987 [1] discussed rationales and methods for achieving human presence on Mars. The discussions still resound today, since 30 years later, humanity has not set its foot on Martian soil. The principles of the disputed Moon Treaty of 1979, formally known as the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, [2] which defined the resources of outer space as the “common heritage of mankind” has not been put to test, and is likely to never be. However, friction could still arise due to the lack of regulations and differing ambitions of the space-faring nations.

The cultural beliefs held by different major space actors, their weighing of the three pillars of human ecology; Nature, Society and Technology [3] and their understanding of the interplay between these will necessarily manifest themselves in their approaches and motivations for, outer space exploration and utilization. Mars acts as the long-term, hard-to-reach goal of the major space agencies and serves as a focal point for the different underlying rationales for presence in space. Negotiations on a Mars treaty would reflect this through the different stances the parties in a treaty take on.

The view on the first pillar of ecology, nature, is for example not shared between the western American cultures and the European cultures. The American cultures are heavily affected by the idea that settlers have conquered the “wilderness”, whereas few such notions exist in European history. In a Mars treaty, this would manifest itself through differing views on the value of an untouched Mars.

The view on the second pillar, society, differs between Asian cultures where expansion and exploration has been subsequent to inner stability, and European cultures, where there is still a struggle with the aftermath of colonization. The Mars treaty negotiations would reflect the military, economic and scientific rationales for going to Mars.

The final pillar, technology, is also controversial. Technology can be used to sustainably and unsustainably harness natural resources to support the society, but also as a tool to support it through provision of jobs and economic growth. For Mars treaty negotiations, this would be represented through determination of the extent and purpose of (possibly human) activities on Mars.

Martian exploration is also about transcending these categories. Von Puttkamer [3] discusses the evolution of humanity, where space becomes the fourth pillar of an extended “super-ecology”. The challenges humanity deals with in the interplays of the traditional ecology, such as population growth, sustainability and climate

changes, can be overcome in the framework of a “super-ecology”. Von Puttkamer [3] suggests that this is only possible if the “spirit of the present society” supports a manned Mars mission, enabling it to harness and acknowledge the extended knowledge the fourth pillar has to offer. In an evolved society, leadership may be distinguished as a “byproduct from the pursuit of worthy goals and how they are pursued”.

This evolution is ongoing, space is already utilized and is a vital part of the workings of the global society. This additional ecological pillar increases the complexity of the interplay, but also provides novel solutions that could not have arisen in the traditional ecology. The benefits from human expansion into space are thus broader and more far-reaching than those given simply from spin-off technologies. It can be theorized that the information age never could have emerged or existed without human presence and cooperation in space.

Von Puttkamer [3] also suggests that, in an evolved society, decisions are made by consensus, which is portrayed as a necessity for achieving joint international efforts to reach Mars. Von Puttkamer [3] did not deem the society ready for these efforts at the time when his article was published, 30 years of space education and utilization has changed the premises for the discussion, making the treaty making workshop an arena where young space professionals can probe society on its readiness and on its transformation in a “super-ecology”.

Mars serves as the watershed in the ongoing evolution. Human presence on Mars would indicate that humanity is taking its first steps out of its Tsiolkovskian cradle.

III. RELEVANT INTERNATIONAL SPACE LAW

The Mars Treaty Making workshop simulated the process of developing a new international treaty for Mars, and thus relied on space law at an international level, not taking into consideration any national legislation. The major texts in this field have been developed between the end of the 1950s and the end of the 1970s in the COPUOS created by the UN in 1959.

The first important work when it comes to space law which we used during the workshop is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, adopted in 1963 by the General Assembly, also known as the Outer Space Treaty. Among the fundamental principles that this text provides, we particularly relied on the following ones:

- The exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind. (Article I)

- Outer space shall be free for exploration and use by all States. (Article I)
- Outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. (Article II)
- The Moon and other celestial bodies shall be used exclusively for peaceful purposes. (Article IV)
- States shall be responsible for national space activities whether carried out by governmental or non-governmental entities. (Article VI)
- States shall avoid harmful contamination of space and celestial bodies. (Article IX)

The second text we considered, and that was used extensively in the development of this workshop, as an inspiration for the draft Mars treaties from the United States and the Russian Federation, is the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, adopted in 1979 by the General Assembly, also known as the Moon Agreement or Moon Treaty. The text develops further some of the principles from the Outer Space Treaty and applies not only to the Moon but also to other celestial bodies, despite what its usual naming suggests. It stresses especially the following ideas:

- those bodies should be used exclusively for peaceful purposes. (Article III)
- their environments should not be disrupted. (Article VII)
- the UN should be informed of the location and purpose of any station established on those bodies. (Article VIII)
- the Moon and its natural resources are the common heritage of all mankind and that an international regime should be established to govern the exploitation of such resources when such exploitation is about to become feasible. (Article IV, XI)

The last statement, although focusing exclusively on the Moon in the agreement, is easily transferrable to Mars, and is one of the key ideas where tensions arise between the space powers and the states without any direct or indirect access to the red planet.

It is important to realize that the Moon Agreement, although adopted in 1979, did not enter into force until 1984 when Austria became the fifth state to ratify it. Since then, only 16 countries have ratified the treaty, none of them being a state with the will and the means to currently reach the surface of the Moon. It means that the text cannot have any real impact in an international court as of today.

Besides those two texts having a direct impact on the Mars Treaty making process, it is important as well to realize that the three other major space treaties have an impact, at least on the way states interact between each other and envision a certain level of cooperation in the

exploration of Mars. Indeed, the Rescue Agreement, the Liability Convention as well as The Registration Convention force the states to provide assistance, take responsibility or undergo certain procedures to ensure the peaceful use of outer space, which extends by definition to future Mars exploration.

IV. WORKSHOP DESIGN

IV.I Audience

We, the audience of this workshop, were ISU SSP15 participants who requested to and were selected to participate in the Policy, Economics and Law Department. We come from diverse backgrounds and were not assumed to have any experience in policy making, treaty making, or political science. Staff members and lecturers played additional roles to such as Chairman, members of the Secretariat and observer states to provide the structure in which this simulation can take place. The PEL participants also previously had a lecture from Dr. David Kendall, incoming chair (2016-2017) of the actual COPUOS, which meets annually in Vienna, Austria in June, along with its two subcommittees, the Scientific & Technical as well as the Legal Subcommittee. Dr. Kendall gave the participants a background lecture on the history and structure of COPUOS and its place in the UN system.

IV.II Learning Objectives

The objectives of the workshop were to expose us to the treaty making process as followed by members of the Legal and Political Subcommittee Working Group within the UN COPUOS. This exposure was intended to provide insight into how treaties are written and what skills and behaviors facilitate successful treaty making as well as a broad understanding of the contrasting positions currently taken relative to Mars exploration by a variety of member states within UN COPUOS.

IV.III Prerequisites

In preparation for the Mars Treaty Making Workshop we were provided with high level knowledge of existing treaties as described in Section III during earlier lectures during SSP15. We were also given reference materials as described in Section IV.VI and requested to become familiar with those applicable to their role in advance of the workshop.

IV.IV Duration

Three and one half hours were allotted for this workshop. This time could vary based on the duration of time allowed for the working session and recap session described in Section IV.V. In this case, the workshop lasted a bit longer due to the request for a bit of extra time to complete the working group session.

IV.V Outline

The following is an outline of the activities that took place during the workshop, in the order in which they occurred.

- Introduction and discussion of the simulation – 30 minutes
- Simulation of opening an UN COPUOS Session – 45 minutes
- Simulated Legal and Political Subcommittee Working Group on the Draft Treaty for Mars – 1 hour 15 minutes
- Simulation of the report of the Committee to the General Assembly, other matters and closing of an UN COPUOS Session – 30 minutes
- Wrap-up and discussion of simulations – 30 minutes

Since reference materials were provided to us in advance, the introductory time allowed us to ask questions about the simulation and get familiar with the activities we would undergo in our roles as delegates. The simulation of a UN COPUOS session included opening the session, adoption of the agenda, a statement by the chair and a general exchange of views before agreeing to adjourn to a Legal and Political Subcommittee Working Group on the Draft Treaty for Mars. The working group negotiated a limited amount of a jointly authored treaty, before returning to the simulation of the UN COPUOS session to present their efforts and recommendation to continue jointly drafting of the Mars Treaty. The working session took more than the allotted one hour fifteen minutes of time because of the desire to make as much progress on drafting the treaty as possible. After the results of the working session were presented to the simulated UN COPUOS session, the opportunity to discuss other matters as requested by delegates or the chairman was presented and then the session was closed. After this was completed, all persons involved with the simulation were invited to share their insights and feelings about the simulation. Fortunately, all participants were so enthusiastic about the topic that running a bit over the allotted time was well received.

IV.VI Reference Material

The following materials were created for use as reference material by all people involved this simulation.

- Chairman Opening Statement
- Journal of the United Nations (which provided a short introduction to the purpose of the informal meeting of UN COPUOS)
- Provisional Agenda
- Provisional List of Participants
- Russian Draft Treaty
- United States of America Draft Treaty

- Statements of intention for the nation they were asked to represent
- Opening statements for the delegates from Austria, the Russian Federation and United States of America

Reference Material for this workshop was generated using inputs that were previously generated by UN COPUOS in the creation of the Outer Space Treaty. The statements of intention were helpful because some of us were asked to represent states that we were not citizens of and existing knowledge of state-specific space agendas was not required to participate in this workshop, although most participants did have some familiarity with that topic. All reference materials relevant to their particular roles were provided to participants in advance of the workshop to provide them time to get familiar with their roles in the simulation. Participants were also given a paper copy of the United Nations Treaties and Principles on Outer Space earlier during the SSP15.

V. LESSONS LEARNED & RESULTS

Numerous lessons were learned during the simulation and during the discussion after the simulation that concluded the workshop. Section V.I describes the lessons learned by us, a subset of the SSP15 PEL department participants. The impact the workshop had on us is described in the results Section V.II.

V.I Lessons Learned

Lessons learned are grouped by topic category and listed in no particular order. Diversity affected the process of treaty making in a variety of ways during this workshop. The following lessons were learned in this area.

- Due to our different backgrounds we contributed different perspectives and valuable insights that would not have been shared if everyone participating in the workshop had come from the same background.
- The individual personalities of each delegate can affect the negotiations process, either positively or negatively; in addition to the effect that the stance of the nation they are representing can have on the process.
- Some participants came from an engineering background, where numbers and equations rule, they had to adapt to a situation where listening and negotiation are the key, and each word has the power to get in the way of the process, making it necessary to bargain over each word.
- The point of view from non-space faring states, less likely to reach Mars in the decades to come, can be very important in the elaboration of a Mars

Treaty or any kind of space treaty for the matter. Since UN COPUOS proceeds by consensus, every member state has means to interfere in the treaty making process, has the possibility to express its concerns and to turn them into conditions for the treaty to be signed. UN COPUOS is comprised of a total of 77 member states, offering a voice to many non-space faring states, which can both sign and ratify the already existing five UN treaties on outer space but also contribute to the elaboration of new texts. This fairly large number, which has grown from 24 in 1959, also makes the whole process slower or even impossible.

- The formality of the UN COPUOS session simulation was enlightening for participants who have never had exposure to that environment. The need to speak in a respectful and formal manner quickly became clear.

Taking on roles outside of your comfort zone can be very enlightening and the following lessons resulted from this.

- The swapping of roles allowed us to express our understanding of the other nations' priorities and values.
- The understanding others had of the space initiatives of your own nation/culture were not always in line with what oneself thought it would be. This became very apparent when others represented a nation/agency other than their own.
- Although some of us had an interest and of the country they represented, thinking and talking as a citizen of another state is a whole different thing and required to shift perspective and force ourselves to stay away from our personal opinions.

Experiencing the treaty making process led participants to believe that certain behaviors and practices contribute to successful treaty making. These behaviors and practices are described below.

- There existed an unstated agreement that, while negotiating, the delegates would strive to reach solutions that everyone could accept rather than maintaining the geopolitical power structures. The participants thus adhered to the proposed "novel way of leadership."
- Small countries with little self-interest can act as mediators and suggest solutions that otherwise not could have been accepted if proposed by opposing powers. We were able to both protect the agencies' self-interests and also balance them with hypothetical and long-term situations.
- Negotiations behind closed doors allowed delegates to share information and ideas that could not be aired in an open environment. Transparency and trust-building was easier to develop when all participants were on equal footing, knowing that ideas would not leave the room without consensus.

- Although the workshop, due to time constraints, did not simulate the pre-committee process, we had the opportunity to experience it during other activities at SSP and it applies as well to the Mars treaty making. We discovered that pre-committee meetings between allies and also between states with a common interest were of paramount importance. They lessen the difficulties of reaching consensus by eliminating many statements of smaller importance and also allows states sharing a common interest to develop a strategy and agree on ideas from the opposing side that could possibly be agreed upon in order to get the non-negotiable ones into the final text.
- Consensus based decision making takes time and is easier to achieve when all involved parties are open to listening to all parties interested in voicing their opinions and suggestions. Additionally, experience in consensus based decision making, no matter what environment, can be helpful in treaty making.
- The potential to influence negotiations through social interactions was also made clear during the time in which representatives settled in before the session was formally opened.

The participants acknowledged that not only existing treaties, but how they have been interpreted and how society has changed since they were drafted, will influence future treaties. Lessons learned in this area are as follows.

- When exploring a theme like Mars exploration regulations, the parallel with the Moon Agreement signed in 1979 can be made easily. The agreement never had any significant impact on the Moon exploration, because none of the states with the capacity or the will to send humans on the Moon ever ratified it. However, it has been a way for less influential states to express their concern about space powers trying to appropriate celestial bodies.
- Both drafts used the phrase “mankind” and “man’s”, but the participants were quick to agree to use terminology that was not gender-specific, such as humankind and humanity, once the topic was broached.
- We also proposed novel formulations that lacked the negative associations provoked by their historic usage, for example “continued presence” rather than settlement or colonization.
- The fact that the two draft treaties emanated from the Russian Federation and the United States created an atmosphere of competition between the historical space racers. They demonstrated their desire to impose their own vocabulary and specific set of words.
- The attendance of both France and Austria as independent treaty parties and not as members of

the European Space Agency (ESA) revealed unexpected oppositions. Whereas the French representative and the Holy See head of delegation for ESA defended the idea of opening Mars to commercial exploitation, as stated in the draft from the USA, the Austrian delegate stood on the Russian Federation side, refusing any kind of commercial activities.

Even though the opinion of an intergovernmental organization as ESA is important in negotiations, and each of its member state knows about the agreed positions at the intergovernmental level, the treaty making process is the opportunity for a smaller state to stand out and present its own opinion.

V.II Results

As a result of this exercise we have a greater understanding of the importance of the inspiration provided by humanity’s entry into space and the potential exploration of Mars by humankind. We came to believe that space could act to “contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples”. All of us have a greater understanding of the implications of policymaking on Mars exploration. The usefulness of existing ideas from other outer space treaties were both acknowledged and put to test during the simulated negotiations.

Sometimes participating in activities that take you outside your comfort zone result in you having more questions than answers. Some of the questions that participants had after participating in this workshop were:

- Is there now the political will to have such a treaty? What are the positions of the UN state members?
- How can this treaty be aligned with the other treaties/conventions/declarations? Shall some of the previous ones be revised in advance?
- What shall be the main content of such a treaty bearing in mind that the Moon Treaty was written after, astronauts walked on the surface of the Moon, that Mars is still unknown and that there is no clear timeline for a human mission to Mars? A general principle declaration may be easier to get approved by the UN GA than a treaty.

More than one of us admitted to feeling frustrated after participating in this workshop. Due to not being able to study both drafts in advance and not having enough time to discuss the drafts in total during the working session. However, the in-depth study of the preamble resulted in knowing that Mars treaty making could be a decade-long process or possibly an impossible endeavor considering the actual opposition of ideas between the two main space powers. This is the reason why the discussions between states should begin

quickly, taking into account the new rising space faring nations, in order to be ready when Mars gets into our reach in the upcoming decades.

VI. POSSIBLE APPLICATIONS

Applications for this workshop outside of the PEL Department within the SSP abound because there are no traditional university courses which provide the opportunity to practice negotiation in an international forum. This workshop could be used to help anyone would will be involved in international activities which utilize consensus building or formal meeting structures. Some examples of technical bodies which utilize some or all of the procedures practiced during this workshop are the International Organization for Standardization (ISO) and the Consultative Committee for Space Data Systems (CCSDS). Workshops such as this could also be used to help prepare new diplomats or international negotiators as they provide an opportunity to practice behavior norms in a formal setting. The only requirement is knowledge of that setting on behalf of the person or group organizing the workshop.

VII. CONCLUSION

The Mars Treaty Making Workshop provided us with a solid introduction to the treaty making process in less than four hours. This introduction was achieved through an extremely realistic simulation of an international intergovernmental negotiation session. The advance distribution of materials and relevant lectures were essential to maximizing the impact of this workshop. The high impact of the workshop was demonstrated by the quantity of lessons learned generated by participants, particularly when compared to the amount of time spent on a complex topic. The intercultural, international and interdisciplinary environment of this workshop made it more interesting and allowed the workshop to have a much broader impact than most post graduate workshops.

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