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Towards a United Nations space policy

Working paper submitted by the Chair*

I. Introduction

1. The General Assembly, in its resolution 64/86, noted with appreciation that the initiative of the Chairman of the Committee on the Peaceful Uses of Outer Space to seek a holistic approach for enhancing coordination between Member States and the United Nations system in applying space science and technology to meet the challenges to development of all countries and to further promote and strengthen the use of space technology and its applications in the United Nations system would be further developed for the consideration of the Committee at its fifty-third session.

2. The space environment is changing rapidly, with a growing number of States seeking to develop or extend their space capabilities. At the same time, a variety of non-State actors are also extending their involvement in space activities. The United Nations is the principal intergovernmental forum to deal with various space issues of global importance. Moreover, the United Nations system itself has become increasingly reliant on space systems for its day-to-day operations. In order for the United Nations to play its necessary role in the space arena, it will need to be supported by a space policy. A United Nations space policy would provide overarching guidance on space activities for United Nations stakeholders, inform United Nations participation in space activities and promote improved coordination and cooperative governance of outer space activities. A world without a common

* This working paper is submitted by Ambassador Ciro Arévalo Yepes, Chair of the Committee for the period 2008-2009. It is a revised and further developed version of conference room paper A/AC.105/2009/CRP.12. Informal consultations on 16 February 2010, on the margins of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, provided new input for the present paper.



United Nations space policy will not be able to respond to the rapidly evolving outer space challenges in the twenty-first century.

3. Space-based systems deliver information and services that protect lives and the environment, enhance prosperity and security, and stimulate scientific, industrial and economic development. They provide improved weather forecasts, satellite broadcasting and navigation services and open up new opportunities in tele-education and tele-medicine. They are therefore critical for an increasing number of key areas of the economy and for meeting development agendas worldwide. Space is thus becoming a global commons offering a unique vantage point from which to address many challenges of the twenty-first century, such as monitoring and better understanding the phenomena of climate change and global warming, as well as supporting sustainable development. Economic globalization in a technologically advanced world has resulted in many cases in the marginalization of countries with scarce resources. The growing reliance on space technology and the increasing pace of international space activities necessitates a more coordinated and strategic approach to space activities at the global level than is currently the case.

II. Space and the United Nations

4. Since the earliest days of the space age, the United Nations has been responsible for the progressive development and codification of international law governing the activities of States in outer space. The Committee on the Peaceful Uses of Outer Space was established by the General Assembly in 1959 (resolution 1472 (XIV)) to review the scope of international cooperation in peaceful uses of outer space, to devise programmes in this field to be undertaken under United Nations auspices, to encourage continued research and the dissemination of information on outer space matters, and to study legal problems arising from the exploration of outer space. At the time of its establishment the Committee had 24 member States. As of 2009, it has 69 member States and a large number of permanent observers representing both intergovernmental and non-governmental organizations.

5. Through the efforts of the Committee on the Peaceful Uses of Outer Space and its Legal Subcommittee, a number of significant contributions to outer space law have been made. A significant first step was the adoption by the General Assembly in 1963 of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space.¹ The years that followed saw the development of five multilateral treaties that further developed concepts contained in the Declaration of Legal Principles:

- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967)²
- Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1967)³

¹ General Assembly resolution 1962 (XVIII).

² United Nations, *Treaty Series*, vol. 610, No. 8843.

³ *Ibid.*, vol. 672, No. 9574.

- Convention on International Liability for Damage Caused by Space Objects (1971)⁴
- Convention on Registration of Objects Launched into Outer Space (1974)⁵
- Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979)⁶

These instruments were later supplemented by another four sets of principles:

- Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (1982)⁷
- Principles Relating to Remote Sensing of the Earth from Outer Space (1986)⁸
- Principles Relevant to the Use of Nuclear Power Sources in Outer Space (1992)⁹
- 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)¹⁰

6. In addition to the codification of these treaties and principles, progress has also been made in developing a common understanding on other issues. All in all, 111 General Assembly resolutions relating to outer space have been adopted since 1958 to 2009 (available at <http://www.oosa.unvienna.org/oosa/en/SpaceLaw/gares/index.html>). For instance, the voluntary Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space were adopted in 2007, and the Safety Framework for Nuclear Power Source Applications in Outer Space was developed jointly by the Scientific and Technical Subcommittee and the International Atomic Energy Agency, and adopted by the Committee in 2009.

7. However, the work of the United Nations and the Committee on the Peaceful Uses of Outer Space on space issues is not limited to treaties, principles and resolutions. A number of practical steps have also been taken, such as the establishment of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) and of the International Committee on Global Navigation Satellite Systems (ICG). The United Nations Programme on Space Applications provides a great number of workshops, training courses, symposiums and expert meetings for the benefit of developing countries. In addition, four regional centres for space science and technology education, affiliated to the United Nations, have been established: in India for the Asia-Pacific region, in Morocco for French-speaking African countries, in Nigeria for English-speaking African countries and jointly in Brazil and Mexico for the Latin American region.

⁴ Ibid., vol. 961, No. 13810.

⁵ Ibid., vol. 1023, No. 15020.

⁶ Ibid., vol. 1363, No. 23002.

⁷ General Assembly resolution 37/92, annex.

⁸ General Assembly resolution 41/65, annex.

⁹ General Assembly resolution 47/68.

¹⁰ General Assembly resolution 51/122, annex.

8. There have been three United Nations Conferences on the Exploration and Peaceful Uses of Outer Space (UNISPACE), in 1962, 1982 and 1999. The recommendations of these Conferences have shaped the agendas of the Committee on the Peaceful Uses of Outer Space and the United Nations Programme on Space Applications. The most recent Conference, UNISPACE III, adopted 33 recommendations. A review of the implementation status of the UNISPACE III recommendations presented by the Office for Outer Space Affairs during the fifty-second session of the Committee in June 2009 revealed that 30 recommendations had been implemented and only 3 were outstanding. Some delegations have spoken of the need to organize a fourth Conference.

9. Space technology and its applications are increasingly being used within the United Nations system to support a wide range of activities. It is the Committee on the Peaceful Uses of Outer Space that focuses on space issues, but at least 25 United Nations entities and the World Bank Group routinely use space systems. Space applications make important and sometimes essential contributions to the work of the United Nations (e.g. in the implementation of recommendations of major world conferences in efforts towards sustainable development), but their role is not prominently recognized. Hence coordination, coherence and synergy are essential for those activities to be effectively carried out by the United Nations system. For this reason, in 1975 the United Nations established the annual Inter-Agency Meeting on Outer Space Activities to promote improved coordination among entities of the United Nations system that use space applications. The Meeting serves as the focal point for inter-agency coordination and cooperation and for preventing duplication of efforts related to the uses of space applications by the United Nations.

10. While the United Nations is critically reliant on space systems for its day-to-day operations and effectiveness, its space activities are fragmented geographically and thematically among different centres. There is therefore a need to strengthen interdisciplinary and inter-institutional cooperation and to promote and enhance space awareness at all levels in the United Nations system. This will maximize synergies and allow space to be an integral part of the major world conferences on various subjects, such as development, resources and environment.

11. The rapid evolution of the space arena, in terms of both the growing number and the diversity of users, underscores the importance of strengthening international legal and policy frameworks for outer space. However, the changing global context for space activities is bringing into focus the need for the establishment of standards to guarantee the long-term sustainability of space activities. To adapt to emerging and future challenges, both stability and change are needed, and it is therefore necessary to adapt the United Nations to the needs of the twenty-first century. In particular, there is a need for increased coordination of United Nations activities to find holistic solutions to current and emerging global problems. Never before has it been so important to have a global United Nations approach to space affairs.

12. The United Nations space organizations, and particularly the Committee on the Peaceful Uses of Outer Space, which was created at the beginning of the space age, need to evolve and adapt to this new context to remain relevant in the future. The United Nations has to date pursued a highly decentralized approach to space among its agencies and organizations. This should not be considered a tenable option for the future. This proposal for a United Nations space policy charts a course towards the United Nations regaining an important place in the global space context, as the

current arrangements are not fully satisfactory. A far more proactive and operational approach is necessary to underpin and sustain the United Nations capability to play its role in the rapidly evolving space arena of the twenty-first century. To improve its ability to play a more strategic and purposeful role, the United Nations will need to develop a balanced space policy that properly addresses the long-term requirements of the global community in its uses of outer space.

13. It is time to set clear directions. Space can contribute to the cohesion and identity of the United Nations and its stakeholders. A United Nations space policy is increasingly necessary to depart from the current ad hoc modus operandi. A sound policy that is relevant to the United Nations objectives and priorities is thus essential for promoting the development and application of space activities for the benefit of humankind.

III. The need for more effective governance on outer space matters*

14. In view of the current evolution of the space arena in terms of the diversification and multiplication of actors, threats and challenges, there is a growing need for the United Nations to take actions providing overall stewardship of space activities for the following reasons.

(a) Stable order in orbit

15. The sustainability of space activities in Earth orbits over the long term is increasingly a matter of concern for spacefaring countries and regional space organizations, as well as for emerging space actors and commercial satellite operators. The Earth's orbital environment is a true common good for humankind. However, the growing population of space debris poses a major threat to the long-term sustainability of space activities. Improving the safety of space operations is thus one of the most important issues for the long-term sustainable use of orbits. Particular emphasis should be placed on the agreement reached by the Committee on the Peaceful Uses of Outer Space on the question of the character and utilization of the geostationary orbit and the subsequent endorsement by the General Assembly, in its resolution 55/122, of improved management of orbital slots and electromagnetic frequencies as a measure for promoting more effective use of outer space.

(b) Integrated approach to the use of space

16. The conventions governing the exploration and uses of outer space have been in place for several decades and have served as the legal framework for space activities. However, many States have not yet acceded to these five core instruments, including some member States of the Committee on the Peaceful Uses of Outer Space. Nonetheless, to preserve order in outer space, it is desirable that States and international organizations conduct their space activities under the coverage of these instruments. Moreover, many States develop, own and operate

* The concept of governance was introduced as a result of the informal consultations held on the margins of the session of the Scientific and Technical Subcommittee on 16 February 2010.

spacecraft without participating in the rule-making process of space law, or without having ratified the existing conventions; this situation needs to evolve. There are many bodies (international, regional and national) involved in rule-making on the uses of outer space. There should be, however, an integrated approach under the auspices of the United Nations. The Committee on the Peaceful Uses of Outer Space will provide an invaluable forum for promoting interregional dialogue and coordination among these bodies. In particular, the greater involvement of the United Nations could help to facilitate the legal harmonization of existing domestic and international legal frameworks for outer space activities and to provide a reference policy framework for nations planning to create their domestic space policies.

(c) *Need to establish a supportive environment for new space users and spacefaring countries*

17. In the first decades of the space age, space activities were the exclusive domain of certain world Powers; now, however, a rapidly growing number of States are involved in space activities. The changing space context, and particularly its growing complexity, increases the importance of multilateral forums to deal with the long-term sustainability of space activities. A United Nations space policy would therefore help to create a supportive system and valuable learning opportunities for emerging space countries.

(d) *Utilization of space for the benefit of all humankind*

18. Space, by its nature, is a useful tool for the management of issues that extend beyond national borders. United Nations-led activities such as UN-SPIDER and those in the field of Global Navigation Satellite Systems (GNSS) have to be promoted to deal with transnational issues, such as disaster relief, the effects of climate change and regional development agendas. Space can also be beneficial for assisting developing countries in improving their capabilities for using their natural resources, optimizing their infrastructure and land use, and implementing more effective governance. Satellite communication has become a powerful engine of growth for development. Remote observation of the Earth by satellite is an increasingly important element of treaty verification for non-proliferation, test-ban and environmental treaties. The agencies of the United Nations system also play a key role in this regard. A United Nations space policy would help to improve human lives by maximizing the benefits derived globally from space systems and services.

IV. Guiding principles for a United Nations space policy

19. A United Nations space policy should be guided by the principles below.

20. **Activities in outer space should be conducted for peaceful purposes and for the benefit of all humankind.** The international space arena in the twenty-first century is very different from what it was in the early days of the space age, when a few States were the only actors. Today there is a great proliferation of governmental and non-governmental actors, operating at the national and international levels. Space activities have thus changed from being the exclusive preserve of a few

technologically advanced countries to a large and growing domain providing critical services and data for all countries.

21. The beneficiaries of space activities are now much more numerous and diverse. Whereas at the beginning of the space age outer space was seen as a domain of scientific and technical activity, today it is a domain for the provision of information and services to people on the ground. Space systems have such widespread applications in modern daily life that they are taken for granted by the many millions of people who benefit from them. This widespread use of space has led to a new perception of space as a valuable global commons in which a number of systems operate.

22. The great reliance on space systems means that security on Earth is increasingly linked to security in space. This underscores the importance of preserving the space environment for peaceful uses. Space systems should therefore not be used to undermine international peace and security.

23. **The space environment should be used in a fair and responsible manner. To this end, all space activities should be conducted in accordance with the relevant international conventions and appropriate international best practices.** Today, many States develop, own and operate spacecraft in orbit without participating in the rule-making processes or ratifying the existing conventions. There are a number of international bodies involved in these rule-making processes, each with its own priorities and embodying different communities of practice. There is a need for a more integrated approach under the auspices of the United Nations.

24. The space environment is a limited natural resource in terms of certain classes of orbits and the electromagnetic frequency spectrum available for applications. The allocation and utilization of orbital slots in the geostationary orbit continues to be an issue of concern to many countries, especially those without the direct means to gain access to space.

25. The near-Earth space environment is becoming crowded, with many operational and defunct spacecraft occupying the same orbital regions. The growing population of man-made objects in space poses a hazard to the future sustainability of space activities. Collisions of space objects often result in fragmentation, which further increases the number of man-made objects in orbit. The intentional production of space debris is of great concern to all users of space systems. For this reason, such activities should be very strongly discouraged by the international community in the interest of preserving the Earth's orbital environment as a safe area in which to operate satellites, with acceptably low risk of disruption by space debris.

26. As more States become actors in the space arena, the orbital environment will become a more crowded and complex environment in which to operate. To date, 29 States have demonstrated suborbital launch capability and 11 have demonstrated orbital launch capability. Security in space, just like security on Earth's roadways, will rely on the orderly, safe and predictable behaviour of all users. The international community should consequently develop a set of space traffic management rules to ensure the orderly, predictable and safe conduct of activities in outer space. The adoption of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space may provide a model for a similar approach to other issues of broad concern.

27. The United Nations treaties and principles on outer space provide the legal framework for space activities, but a significant number of countries becoming active participants in the space arena have not yet ratified the treaties. Even a number of member States of the Committee on the Peaceful Uses of Outer Space have not ratified the Registration Convention and the Liability Convention. The United Nations should encourage maximum accession to these international legal instruments to promote fair and responsible use of the space environment. Another area in which the United Nations should take a lead is in facilitating the harmonization of domestic and international legal frameworks relating to outer space. International cooperation will be better achieved when countries have evolved similar domestic space policies.

28. Although the principles upon which the United Nations treaties and principles on outer space were developed are as valid today as they were 40 years ago, the space arena is very different, with a much greater number and diversity of actors. The technological possibilities are also much greater. This may lead to situations in the future for which the present international legal instruments are not adequate. Hence, there is a need to consider the development of the international legal and political framework in the context of developments likely to occur in the next 50 years of the space age.

29. **There should be an integrated international and interregional approach to space activities. The international community should support and strengthen international cooperation in the space arena to preserve the space environment and its benefits for all humankind.** All space activities are global in character and essence. As more users enter the space environment, it becomes more important to promote and strengthen international cooperation in the peaceful uses of outer space. At present, there are five principal forums in which overarching space issues are discussed in the United Nations and its specialized agencies: the Committee on the Peaceful Uses of Outer Space, in Vienna, the Conference on Disarmament, in Geneva, the General Assembly, in New York (and several of its committees, such as the Disarmament and International Security Committee and the Special Political and Decolonization Committee), the United Nations Educational, Scientific and Cultural Organization, in Paris, and the International Telecommunication Union (ITU), in Geneva. In addition to these, the World Meteorological Organization, in Geneva makes use of space systems for monitoring and predicting terrestrial weather, and also supports international coordination of space weather activities, an area of growing importance. One of the objectives of a United Nations space policy would be to improve coordination among these forums for a more effective and coordinated use of outer space by the United Nations system, including its specialized agencies and all its stakeholders.

30. The international community should support and strengthen international cooperation to preserve the space environment and its benefits for all humankind. In this regard, the Committee on the Peaceful Uses of Outer Space should encourage the greatest level of accession and adherence to the international treaties and principles on the peaceful uses of outer space. The creation and implementation of a supportive international regulatory environment for conducting peaceful space activities should thus be encouraged. The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and Interest of all States,

Taking into Particular Account the Needs of Developing Countries, should be implemented in a more effective manner.

31. Issues of global importance, such as space-based disaster management, space debris mitigation, space traffic management, the safety of nuclear power sources in outer space and defence of the planet against impacts of near-Earth objects, all require a coordinated global response. In the area of space-based disaster management, the United Nations has, for many years, utilized space assets to support disaster relief operations. With the UN-SPIDER initiative, the focus is on developing capacity to ensure access to and use of space-based solutions during all phases of a disaster, including the risk-reduction phase, which will contribute to a significant reduction in loss of lives and property. In the area of space debris, work in the Committee on the Peaceful Uses of Outer Space has already led to the adoption of its Space Debris Mitigation Guidelines. Although non-binding, those Guidelines are supported by all leading actors in the space arena. Likewise, steady progress is being made on the other issues of broad international interest, particularly in the domain of GNSS. The solutions to such issues can be found only through international cooperation, and the United Nations is the appropriate intergovernmental forum to pursue such solutions.

32. **The international community at large should encourage mechanisms to improve all States' access to the benefits of the exploration and peaceful uses of outer space.** The past two decades have seen the emergence of a number of space systems that are highly capable global utilities serving millions of users around the world every day. However, to maximize the benefits of space technology for developing countries, it is essential to support capacity-building in those countries so that they can utilize those technologies. For many years, the United Nations has played a leading role in building capacity in developing countries to harness space applications for progress and development. Now, many of those countries are themselves beginning to emerge as space countries. For them, access to the experience and knowledge gained by more experienced countries is very important.

33. In the early days of the space age, the Earth's orbital environment was essentially a boundless resource accessible to only a very limited number of actors. Therefore, avoiding interference or collisions with other users of the orbital environment was a relatively simple matter. Today, this is no longer the case. Emerging space countries need to take into account the many other users of the space environment, and they need to take steps to avoid collisions and debris hazards in the space environment, as well as the accidental introduction of further debris. This can happen only if the necessary information is shared and the necessary capacity is developed in emerging space countries to utilize such information. Hence, international cooperation between advanced and emerging space actors to build capacity is a key to ensuring the long-term sustainability of space activities for all users of space.

34. Cooperation between established and emerging space countries in the same region is a good way to enhance and accelerate the development of space capabilities among the latter. Through its very wide reach, the United Nations is in a unique position to encourage and strengthen such regional initiatives. As one example, the five regional centres for space science and technology education, affiliated to the United Nations, provide a series of platforms for such cooperation. In that regard, the General Assembly has recognized the important role played by

regional mechanisms such as the Space Conference of the Americas, the African Leadership Conference on Space Science and Technology for Sustainable Development, the Asia-Pacific Regional Space Agency Forum and the Asia-Pacific Space Cooperation Organization.

V. Means for implementing a United Nations space policy

35. The principles and practices of a United Nations space policy cannot be realized if there are no appropriate and adequate means to do so. At the moment, neither the Committee on the Peaceful Uses of Outer Space nor other international organizations have sufficient budgets or institutions to implement a United Nations space policy. It is therefore important to establish credible means for achieving the goals of a United Nations space policy. These means could be achieved if the United Nations were to:

(a) *Encourage Member States to cooperate in the establishment of regional space cooperation forums and agencies for developing regional space programmes.* Regional space agencies and regional space programmes are of particular importance because geographically proximate States can develop and share assets to address the same concerns and issues. For instance, they can share a single satellite in geostationary orbit for satellite communications, broadcasting and meteorology. It would be highly useful to establish a common regional space policy for using the same satellites for common purposes, which would promote regional cooperation and maximize the use of limited resources such as orbital slots. Furthermore, regional space agencies can provide satellite images that may be shared by Member States for cooperative security and confidence-building measures. The United Nations could also play a role as an interregional forum for exchanging views and interests from these regional space agencies;

(b) *Strengthen the function of regulating the orbital environment for the fair and responsible use of space.* The management of the Earth's orbital environment should not be left up to individual States or agencies. It is in the common interest of all humankind, and the United Nations should therefore work towards establishing an international mechanism for monitoring the creation of debris and the implementation of debris-mitigation measures. There should be a discussion on establishing within the Office for Outer Space Affairs an ad hoc monitoring entity that has access to data and catalogues of debris collected by Member States and analyses the situation of debris mitigation. That ad hoc entity would monitor compliance by Member States with the existing international space conventions and with relevant recommendations, particularly in regard to the Space Debris Mitigation Guidelines, and would report to the Committee. That entity should also promote greater accession to and compliance with the Registration Convention and the Liability Convention, not only by new actors, but also by established actors in space;

(c) *Promote dialogue between spacefaring States, space-user States and other organizations.* It is the role of the United Nations to foster space activities to promote the socio-economic development of developing countries. In order to do so, there should be a forum for discussing the requirements and concerns of users and of spacefaring countries that build and operate space systems. International

non-governmental organizations, international agencies such as ITU and private entities should support this dialogue and develop application programmes for developing countries to use space-derived data and space-based infrastructure;

(d) *Develop a forum of spacefaring States and a forum of space-user States.* Although the United Nations provides a forum for all Member States, it would be useful to establish a forum of spacefaring States, which have capabilities for developing, launching and operating spacecraft, and a similar forum of space-user States that focus on using space systems for their development. Given that the spacefaring States are also the principal space users, the space-user forum should be open to all Member States. These forums would be useful platforms for facilitating communication among and between users and developers of space systems.

VI. The way forward

36. In the new space era that is unfolding, the United Nations cannot afford to miss the opportunity to develop its own long-overdue space policy. A world without a United Nations space policy would be lacking a key element to face the future with confidence, to improve current mechanisms for the exploration and uses of outer space and to ensure the long-term sustainability of space activities. Moreover, the United Nations needs to find a new way of thinking about its role in the world, and space is a crucial element in this context.
