

UNITED NATIONS
INSTITUTE
FOR DISARMAMENT
RESEARCH

NORMS OF BEHAVIOUR, BARRIERS TO ENTRY?

Facilitating the Process
for the Development of an
International Code of Conduct
for Outer Space Activities



UNITED NATIONS

Note

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this document are the sole responsibility of the author.

They do not necessarily reflect the views or opinions of the United Nations or of UNIDIR's sponsors.

About UNIDIR

The United Nations Institute for Disarmament Research (UNIDIR)—an autonomous institute within the United Nations—conducts research on disarmament and security. UNIDIR is based in Geneva, Switzerland, the centre for bilateral and multilateral disarmament and non-proliferation negotiations, and home of the Conference on Disarmament. The Institute explores current issues pertaining to the variety of existing and future armaments, as well as global diplomacy and local tensions and conflicts. Working with researchers, diplomats, government officials, NGOs and other institutions since 1980, UNIDIR acts as a bridge between the research community and governments. UNIDIR's activities are funded by contributions from governments and donor foundations.

Learn more at www.unidir.org.

Norms of Behaviour, Barriers to Entry?

Introduction

During the early stages of space exploration, the world watched as two superpowers pushed the limits of what was considered to be within the realm of human achievement. Satellites and spacecraft circled the Earth from far beyond the atmosphere, providing us with a new perspective of life on the surface. This has changed the way we approach social, economic, and security challenges, and given us new tools to do so. Today, more than 60 states of varying degrees of technological, economic and political development are conducting space activities at some level, and all indications suggest that this number will only continue to grow.

Some of the side effects and consequences of so much space activity is the emergence of certain challenges to the relative stability currently enjoyed in outer space. This includes threats such as collisions between spacecraft, the proliferation of space debris¹ and the risk of the spread of armed conflict into outer space. These phenomena are regarded as critical threats because of their potential to destabilize the space environment. Policymakers, having agreed that security in space should be strengthened in order to preserve the long-term utility of space, have begun to look for solutions to respond to these threats through strengthening multilateral agreements.

One option is the development of norms of behaviour for space activities, particularly norms of a voluntary, non-legally binding nature. Norms of behaviour are “rules of the road” that set parameters on what is considered by the international community to be responsible behaviour. This option has received considerable attention in multilateral fora because the voluntary nature provides much needed political flexibility for the building of consensus, which is not possible with a legally binding instrument, as has been seen in recent attempts to negotiate a treaty banning the placement or use of weapons in outer space.² A number of multilateral initiatives are presently underway that seek to establish just such a voluntary framework.

However, the manner in which such norms are implemented can have a wide range of economic, political, and technical impacts on the accessibility of outer space, not all of which will be felt uniformly by space actors. The adoption of any regulatory framework will also likely have unforeseen consequences that could create barriers to entry for new space entrants. Developing countries, in particular, will have limited technical and financial resources with which to meet new standards of conduct. This could prove to be a significant source of concern for emerging space actors. This paper examines the different approaches to norms of behaviour and their potential impacts on the space activities of different players, especially those in the developing countries. It also assesses the approaches being adopted by current multilateral initiatives to balance the need for new norms against the needs of developing countries and emerging space actors.

Effects of norms of behaviour

Voluntary norms of behaviour can be embodied in a variety of instruments, including detailed bilateral agreements or broad international declarations. Regardless of the form, in the outer space context, the purpose of norms is to influence actors to conform to a particular standard of conduct that will help to ensure the long-term sustainability of space activities for all.³ To date, tools that have sought to establish norms of behaviour have typically done so through one of three approaches: technical guidance, information- and data-sharing, and cooperative mechanisms. A single instrument may apply any one of these approaches or a combination.

Technical guidelines

Some of the norms that have been developed by the international community are technical guidelines based on best practices. These guidelines offer specific, detailed technical recommendations on how space activities can be conducted with a view towards ensuring the long-term sustainability of outer space activities. Best practices are typically based on lessons learned by established actors, and are largely bound by readily available technology. These instruments must be carefully balanced in order to promote safety without stifling activity all together.

1 Space debris is defined as all manmade objects including fragments and elements thereof, in Earth orbit or re-entering the atmosphere, that are non-functional; Inter-Agency Space Debris Coordination Committee Space Debris Mitigation Guidelines, § 3.1.

2 S. Ozonobishchev, “Codes of Conduct for Outer Space”, in A. Arbatov and V. Dvorkin (eds.), *Outer Space: Weapons, Diplomacy, and Security*, Carnegie Endowment for International Peace, 2010, pp. 69–71. J. Moltz, *The Politics of Space Security*, Stanford Security Studies, 2nd ed. 2011, pp. 301–302.

3 J. Beadsworth, “The role of political flexibility: building norms of behaviour for greater space security”, presented at the UNIDIR regional seminar [Building Confidence for Eurasian Space Activities Through Norms of Behaviour](#), Astana, 2–3 October 2013.

One notable example is the Space Debris Mitigation Guidelines, developed by the Inter-Agency Space Debris Coordination Committee (IADC), which provides detailed recommendations for the operation of space assets so as to minimize the proliferation of space debris.⁴ Another example is the Safety Framework for Nuclear Power Source Applications in Outer Space, developed by the Scientific and Technical Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and the International Atomic Energy Agency, which sets out technical recommendations for the use of nuclear power sources in space assets so as to limit possible threats to humans and the environment.⁵

The primary benefit of technical guidelines is that they give specific recommendations that can have a quantifiable impact on problems. Under the Space Debris Mitigation Guidelines, for instance, spacecraft located in geosynchronous orbit (GEO)—one of the most highly populated orbits—should be manoeuvred at the end of mission as far above the orbit as possible so as not to interfere with other spacecraft and risk the creation of additional debris.⁶ Such a provision can be readily acted upon.

These technical guidelines also have quantifiable costs that must be borne by space actors. In the example above, a satellite that must be moved to a higher orbit must carry sufficient fuel to accomplish such a manoeuvre. This will either increase the fuel payload, which increases launch cost, or will require a shortening of the spacecraft's operational lifetime so that there is enough fuel left to re-orbit. This can reduce the economic viability of a spacecraft.⁷ Implementation will also require additional expertise in order to plan and execute the manoeuvre.

Such considerations are particularly challenging for emerging space actors that have limited technical and financial resources with which to operate. In this context, it is additionally beneficial that norms such as the Space Debris Mitigation Guidelines are of a voluntary nature, which provides flexibility in terms of application to allow emerging actors time to bring their activities into line with newly adopted standards.

Information- and data-sharing

The second type of norm that has been applied to space activities is related to the transfer and sharing of information and data. This category includes notifications of launch activities, and the sharing of space situational data and of information related to space policies. Transparency and confidence-building measures (TCBMs), which call for states to “share information with the aim of creating mutual understanding and trust”,⁸ fall under this category.

Policymakers concerned with misperceptions regarding space activities find these norms useful because they can help to mitigate the risks of misunderstandings or miscalculations among states.⁹ TCBMs can be useful in those cases where space activities are being carried out with dual-use technology that, while intended to be peaceful, might be perceived as threatening. TCBMs can also be useful in developing comprehensive space situational awareness for collision avoidance by providing critical additional data regarding the trajectory of spacecraft. Such measures are intended to augment existing space situational awareness, which is presently provided in large part by just a few select actors such as the United States of America and the Space Data Association.

Examples of norms related to information- and data-sharing can be found in the recent report of the United Nations Group of Governmental Experts on TCBMs in Outer Space Activities (GGE). One of the recommendations is that states provide notifications related to outer space activities such as space launches and orbital manoeuvres, particularly when such might pose a risk to the safety of other spacecraft.¹⁰ It is hoped that this would give a clearer picture of daily space activities, fostering mutual understanding among space actors.

4 IADC Space Debris Mitigation Guidelines, § 1. The work of the IADC served as the basis for the Guidelines adopted by COPUOS and endorsed by the United Nations General Assembly. General Assembly, *International Cooperation in the Peaceful Uses of Outer Space*, UN document A/RES/62/217*, 1 February 2008.

5 L. Summerer and U.M. Bohlmann, “The STSC/IAEA Safety Framework for Space Nuclear Power Source Applications”, in I. Marboe (ed.), *Soft Law in Outer Space: The Function of Non-Binding Norms in International Space Law*, 2012, p. 231.

6 IADC Guidelines, § 5.3.1. COPUOS Space Debris Mitigation Guidelines, guideline 7.

7 *State of the Satellite Industry Report*, sponsored by the Satellite Industry Association, prepared by the Tauri Group, June 2013. M. Holmes, “Ex-Im Bank chairman talks satellite investment strategy”, *Via Satellite*, 3 September 2013.

8 General Assembly, *Report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities*, UN Document A/68/189*, 29 July 2013, para. 20.

9 F.A. Rose, “Pursuing space TCBMs for long-term sustainability and security”, delivered at the International Symposium on Sustainable Space Development and Utilization for Humankind, Shinagawa, Tokyo, 28 February 2013.

10 General Assembly, *Report of the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities*, UN Document A/68/189*, 29 July 2013, paras. 39–45.

The bulk of activity under this approach to norms falls to established space actors, particularly those with dedicated military space programmes. The actors that carry out the most activities will have to submit the greatest amount of information and data. However, this approach can be a cause of concern for states wishing to protect sensitive information or data related to national security. Such a concern is likely to be the exception rather than the rule, and the political flexibility of norms could prove advantageous in balancing national security and space stability on a case by case basis.

Several instruments have also sought to establish parameters for consultations regarding space activities and the designation of points of contact. These provisions are intended to facilitate interactions between states, particularly for the transfer of information and data, and provide mechanisms for the peaceful resolution of disputes related to space activities. These can be found in a variety of instruments intended to establish norms of behaviour, including the GGE report.¹¹

Cooperative mechanisms

The third category of norms encourages cooperation among states for the provision of technical assistance for those states still developing space capabilities. In particular, such norms are intended to lower barriers through the sharing of technical knowledge and expertise at mutually agreed levels of cooperation. Such principles were drafted at the earliest stages of development of an international regime for space activities, in the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, adopted by the United Nations General Assembly in 1962 and reiterated in the 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, adopted in 1996. While not creating an affirmative obligation to cooperate, these instruments have sought to ensure that developing countries are able to benefit equally from space activities through the strengthening of international relations.¹²

A fourth approach?

As noted above, establishing voluntary norms of behaviour, particularly technical guidelines, will likely have consequences for emerging space actors. While norms such as TCBMs will require additional resources for compliance, their impact is unlikely to be considered a barrier to entry. Rather, it is the technical and financial hurdles that might be set in place that will pose challenges. There are other technical options to be explored that might not have such impacts on new entrants, but which have significant limitations. For example, proposals for the active removal of space debris from orbit face a host of legal, political, and financial complexities that will require years to be resolved before such operations could begin.¹³ In this particular context, voluntary mitigation measures represent a useful first step.

Another possible option is for the international community to choose simply not to act. At the most recent session of the Scientific and Technical Subcommittee of COPUOS, the IADC presented a report on the stability of the low-Earth orbit (LEO) environment, in which it concluded that the present level of debris created by outer space activities is not sustainable.¹⁴ Furthermore, it added that even assuming 90% compliance by space actors with the Space Debris Mitigation Guidelines, more aggressive mitigation measures will nevertheless be necessary to ensure that current space activities can continue in these limited orbits. The cost of such measures to space-based services would include the necessity to utilize new, less useful orbits for operations and the hardening of satellites against space debris. The alternative of inaction becomes less tenable even for emerging space actors when one considers the implications of operating in a space environment where debris has been allowed to proliferate even further.

With the support of emerging actors—who stand to be major players in space in the near future—norms of behaviour have a significantly better chance of making noticeable impact on the security and stability of outer space. Policymakers have at their disposal the two previously mentioned approaches to norms of behaviour, capable of offsetting the burden incurred by emerging space actors in ensuring the stability of space. The question then becomes one of achieving the right balance of obligations for established and for emerging space actors in order to command widespread support.

¹¹ Ibid., paras. 57–59.

¹² G. Hafner, “Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States”, in I. Marboe (ed.), *Soft Law in Outer Space: The Function of Non-Binding Norms in International Space Law*, 2012, pp. 272–274.

¹³ B. Weeden et al., “International Perspectives on On-Orbit Satellite Servicing and Active Debris Removal and Recommendations for a Sustainable Path Forward”, IAC-13.E3.4.7, 64th International Astronautical Congress, Beijing, China, September.

¹⁴ The report is available at www.unoosa.org/pdf/pres/stsc2013/tech-12E.pdf.

Achieving the right balance

Policymakers are seeking the right balance of voluntary norms of behaviour in order to spread the burden of ensuring space stability among all actors in such a way as to minimize additional barriers to entry for new actors. One recent initiative is the previously mentioned report of the GGE on TCBMs. The report invites space actors to share as much information as possible with others so as to provide a clearer picture of what is happening in outer space.

Another initiative is the Working Group of the Scientific and Technical Subcommittee of COPUOS on the Long-Term Sustainability of Outer Space Activities, which has presented drafts of the proposed guidelines to COPUOS for comment.¹⁵ The Working Group makes technical recommendations on space activities with the objective of ensuring that the benefits of space activities are maintained for sustainable development on Earth. While providing technical guidelines that will have an economic impact—including that the COPUOS version of the Space Debris Mitigation Guidelines be incorporated into national legislation—their work specifically considers the needs of developing countries. It includes recommendations for cooperation and data exchange on issues such as disaster mitigation, space situational awareness, and space weather. The Working Group seeks to lessen the burden for emerging space actors of adhering to norms of behaviour in space activities through cooperative efforts with established space actors.

Another notable multilateral initiative under discussion is the European Union's proposed International Code of Conduct for Outer Space Activities (ICoC). This initiative seeks to mitigate threats posed by the proliferation of space debris and the potential spread of armed conflict into outer space through establishing voluntary norms of behaviour. To achieve this, the ICoC uses a combination of all three approaches listed above. While offering some technical guidelines on issues such as space debris, it also contains recommendations for increased cooperation among states and the designation of points of contact.¹⁶ It also provides numerous TCBMs intended to enhance space situational awareness, a provision that would benefit all actors provided that such data is made publicly available in a timely manner.¹⁷

Conclusion

As the world grows increasingly dependent on outer space activities, it is clear that measures must be taken to ensure that the stability that facilitates so many space-based benefits is not lost. In this context, policymakers seek to establish standards of conduct that will enhance the safety and security of the space domain. But such standards will also create barriers to entry. This is particularly true for technical guidelines, more so than for TCBMs or cooperative mechanisms. These barriers will be felt most acutely by new space actors with limited technical and financial resources for space activities. However, at present, political and technical realities are such that other alternatives are not viable, and the price of inaction is too costly for all actors. In this context, policymakers have proposed numerous options for offsetting the potential technical and financial hurdles for new space entrants, through mutually agreed levels of international cooperation, as well as information- and data-sharing. The challenge for these multilateral initiatives to develop norms is to strike the right balance among the various approaches to norms so that the interests of all actors are taken into account.

¹⁵ General Assembly, *Compilation of Proposed Draft Guidelines of Expert Groups A to D of the Working Group on the Long-term Sustainability of Outer Space Activities, as at the Fiftieth Session of the Scientific and Technical Subcommittee, Held in February 2013*, UN Document A/A.C.105/1041, para. 2.

¹⁶ Sections II and III of the draft ICoC, ver. 16, September 2013.

¹⁷ Section III of the draft ICoC, ver. 16, September 2013.



**Facilitating the Process for the Development of an
International Code of Conduct for Outer Space Activities**
CFSP/2012/05/COC-UNIDIR, carried out with funding by the European Union